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STUDIES IN THE APOCYNACEAE. IV[1]

THE AMERICAN GENERA OF ECHITOIDEAE

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V. FORSTERONIA G. F. W. Meyer

Forsteronia G. F. W. Meyer, Fl. Esseq. 133. 1818; A. DC. in DC. Prodr. **8**: 436. 1844; Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 95. 1860; Benth. & Hook. Gen. Pl. **2**: 710. 1876; Miers, Apoc. So. Am. 242. 1878; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 187. 1895.

Syringosma Mart. ex. Rchb. Consp. 134. 1828.

Thyrsanthus Benth. in Hook. Jour. Bot. **3**: 245. 1841; A. DC. loc. cit. 386. 1844; Miers, loc. cit. 93. 1878, nec Ell. nec Schrank.

Aptotheca Miers, loc. cit. 150. 1878.

Lactescent, fruticose or suffruticose lianas. Stems volubile, terete, the branches opposite or alternate. Leaves opposite, or infrequently ternate or quaternate in certain species, entire, penninerved, the upper surface bearing few to several glandular emergences at the base of the midrib, or eglandular, the lower surface bearing with more or less constancy a single rather inconspicuous, lenticular foveum or pit in the axils of the midrib and principal primary veins; nodes inconspicuously

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[1] Continued from ANN. MO. BOT. GARD. **20**: 605–790. (1)–(186). 1933.

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stipulate. Inflorescence terminal or both terminal and lateral, aggregate dichasial to thyrsiform (simple in *F. simulans*). Calyx 5-parted, the lobes essentially equal, cleft nearly to the receptacle, imbricated, bearing within one to several squamellae, or the squamellae evidently lacking. Corolla rotate or subrotate, the tube relatively short, exappendiculate within, the orifice not annulate, the limb actinomorphic, 5-parted, dextrorsely, or rarely sinistrorsely, convolute. Stamens 5, the anthers wholly exserted to essentially included, connivent and agglutinated to the stigma, consisting of 2 parallel, uniformly fertile sporangia borne ventrally near the apex of an enlarged, sagittate, peltate connective; pollen granular; filament free or agglutinated to the style. Carpels 2, apocarpous, or very rarely syncarpous, united at the apex by the fusiform or subcapitate stigma; ovules many, several-seriate, borne upon an axile, binate placenta. Nectaries 5, separate or more or less concrescent. Follicles 2, apocarpous, or more or less agglutinated, dehiscing along the ventral suture, containing many dry, truncate, apically comose seeds.

Type species: *Forsteronia spicata* (Jacq.) G. F. W. Meyer, Fl. Esseq. 133. 1818.

KEY TO THE SUBGENERA

A. Stamen filaments exappendiculate................Subgen. I. EUFORSTERONIA
AA. Stamen filaments with conspicuous, membranaceous appendages above....
....Subgen. II. PTERANTHERA

Subgen. I. EUFORSTERONIA Woodson, subgen. nov.

Stamen filaments exappendiculate, the anthers merely acuminate with more or less evident, hyaline tips. *Spp. 1–46.*

KEY TO THE SPECIES

a. Anther-tips exserted, often barely so, or essentially included; filaments distinct and free, not agglutinated to the style.
  b. Anthers 0.07–0.1 cm. long, the tips barely exserted or essentially included.
    c. Ultimate branches of the inflorescences regularly and determinately composed, not indefinitely congested.
      d. Leaves cordate, usually obscurely so.
        e. Corolla-lobes minutely papillate or essentially glabrous within; anther-tips minutely barbellate; plants of British Guiana and northern Brazil.......................................*1. F. gracilis*

ee. Corolla-lobes conspicuously pilosulose within; anther-tips glabrous or essentially so; plants of southern Brazil............*2. F. pilosa*

dd. Leaves not cordate.

e. Anther-tips glabrous or essentially so.

f. Corolla 0.2–0.25 cm. long..........................*3. F. Luschnathi*

ff. Corolla 0.3–0.35 cm. long..........................*6. F. Gardneri*

ee. Anther-tips abundantly barbellate.

f. Calyx-lobes ovate-deltoid, obtuse; squamellae numerous, indefinitely and regularly distributed; plants of Venezuela and Colombia.......................................*4. F. elachista*

ff. Calyx-lobes lanceolate to ovate-lanceolate, acute to acuminate; squamellae relatively few, in alternate groups; plants of Peru ....*5. F. graciloides*

cc. Ultimate branches of the inflorescences indefinitely congested, at least the lower..*7. F. affinis*

bb. Anthers 0.125–0.2 cm. long, the tips usually manifestly exserted.

c. Stem and leaves ferruginous-tomentulose.........................*8. F. rufa*

cc. Stem and leaves glabrous or essentially so.

d. Ovary manifestly 2-lobed, apocarpous.

e. Inflorescences typically thyrsiform or corymbose.

f. Stigma wholly included among the connate anthers.

g. Leaves glandular at the base of the midrib above.

h. Calyx-lobes somewhat shorter than the corolla-tube to very slightly longer; species of Central and South America.

i. Anther-tips more or less barbellate; leaves 8–20 cm. long.

j. Leaves membranaceous; plants of the Guianas and Trinidad................................*9. F. Acouci*

jj. Leaves coriaceous or subcoriaceous.

k. Corolla very minutely and irregularly papillate to essentially glabrous without; plants of northern Brazil and adjacent Peru..........*10. F. Benthamiana*

kk. Corolla densely and uniformly puberulent-papillate without; plants of British Honduras..*11. F. viridescens*

ii. Anther-tips glabrous; leaves 3–9 cm. long.

j. Inflorescences pyramidal; calyx-lobes ovate, acute to acuminate; plants of the Guianas and the lower Amazon Valley......................*12. F. guyanensis*

jj. Inflorescences corymbose; calyx-lobes ovate to ovate-deltoid, obtuse or rounded; plants of northeastern Brazil and the upper Amazon Valley.....*13. F. brevifolia*

hh. Calyx-lobes much longer than the corolla-tube; plants of Jamaica..................................*14. F. Wilsonii*

gg. Leaves eglandular.

h. Leaves heavily coriaceous; calyx-lobes 0.175–0.3 cm. long ....*15. F. diospyrifolia*

hh. Leaves firmly membranaceous; calyx-lobes 0.08–0.12 cm. long.......................................*16. F. Riedelii*

ff. Stigma somewhat exserted beyond the connate anthers.

g. Inflorescences about as long as the subtending leaves, or nearly so, relatively lax and diffuse; calyx-lobes 0.075–0.1 cm. long, obtuse or rounded............................*17. F. Duckei*

gg. Inflorescences much shorter than the subtending leaves, relatively congested; calyx-lobes 0.1–0.17 cm. long, acute to acuminate..................................*18. F. laurifolia*

ee. Inflorescences compound-subspiciform, the branches very short and indefinitely congested...........................*19. F. paludosa*

dd. Ovary superficially more or less 5-lobed by the pressure of the nectaries, more or less completely syncarpous toward the base, the fruit, however, appearing normal and apocarpous.

e. Bracts very conspicuous, as large as the calyx-lobes or somewhat larger, at least in part, more or less foliaceous.

f. Individual pedicels subtended by at least one bract conspicuously larger than the calyx-lobes; plants of Bolivia....*20. F. amblybasis*

ff. Individual pedicels subtended by bracts smaller than the calyx-lobes; plants of Peru..........................*21. F. decipiens*

ee. Bracts relatively inconspicuous throughout, smaller than the calyx-lobes, scarious; plants of east-central Brazil.........*22. F. montana*

aa. Anthers wholly exserted; filaments agglutinated to the style, at least above.

b. Leaves glandular at the base of the midrib above; species of South and Central America (*41* also indigenous to Cuba).

c. Inflorescences aggregate dichasial to thyrsiform, obviously compound.

d. Ovary apocarpous; fruit bifollicular; species of Central and South America generally.

e. Squamellae numerous, opposite the calyx-lobes or regularly and indefinitely distributed.

f. Corolla 0.4–0.55 cm. long; species of South America generally.

g. Leaves generally puberulent beneath.

h. Calyx-lobes acute to acuminate.

i. Inflorescences rather narrow, usually much longer than broad; corolla essentially glabrous without..*23. F. pubescens*

ii. Inflorescences subcorymbose, broader than long; tips of the corolla-lobes conspicuously puberulent-papillate without................................*24. F. cordata*

hh. Calyx-lobes broadly obtuse or rounded............*25. F. mollis*

gg. Leaves glabrous beneath, or merely minutely barbellate in the axils of the midrib.

h. Corolla essentially glabrous without.

i. Calyx-lobes acute to acuminate.

j. Leaves obscurely cordate, wholly glabrous beneath; plants of Ecuador....................*26. F. subcordata*

jj. Leaves obtuse or rounded at the base, minutely barbellate in the axils of the midrib beneath; plants of eastern Brazil......................*27. F. leptocarpa*

ii. Calyx-lobes broadly obtuse or rounded.

j. Peduncles and pedicels densely and conspicuously puberulent to tomentulose.

k. Leaves 7–12 cm. long, 4.0–7.5 cm. broad; corolla-lobes very minutely papillate or essentially glabrous within; plants of northern Bolivia......*25. F. mollis*

kk. Leaves 3.5–10.0 cm. long, 2.0–5.5 cm. broad; corolla-lobes puberulent within; plants of southern Brazil ....*28. F. australis*

jj. Peduncles and pedicels very minutely and indefinitely papillate to essentially glabrous.

k. Leaves rather delicately membranaceous, 4.5–8.0 cm. long, 2–4 cm. broad; plants of Venezuela............ ....*29. F. obtusiloba*

kk. Leaves subcoriaceous to firmly membranaceous, 3.0–6.5 cm. long, 1.2–2.7 cm. broad; plants of southern Brazil and adjacent Bolivia, Paraguay, Argentina, and Uruguay.......................*30. F. glabrescens*

hh. Corolla densely puberulent or puberulent-papillate without ....*31. F. tarapotensis*

ff. Corolla 0.35–0.37 cm. long.

g. Corolla white, the lobes minutely and rather irregularly pilosulose within; plants of Central America....*32. F. myriantha*

gg. Corolla yellowish-green, the lobes glabrous within; plants of northwestern Peru.............................*33. F. galbina*

ee. Squamellae alternate with the calyx-lobes, solitary, or infrequently in groups of 2–3.

f. Bracts conspicuous, and more or less foliaceous (except in *37*), persistent, at least in part.

g. Bracts conspicuous, as large as the calyx-lobes or larger, at least in part.

h. Species of South America.

i. Inflorescences rather narrowly thyrsiform; follicles 13–25 cm. long..........................*34. F. thyrsoidea*

ii. Inflorescences subcorymbose-thyrsiform; follicles 5–10 cm. long...............................*35. F. Velloziana*

hh. Plants of Central America; inflorescences thyrsiform-subspiciform, the lateral branches virtually lacking; follicles unknown................................*36. F. chiriquensis*

gg. Bracts relatively inconspicuous, smaller than the calyx-lobes; inflorescences thyrsiform-subspiciform, the lateral branches virtually lacking; plants of Ecuador........*37. F. Pycnothyrsus*

ff. Bracts inconspicuous, scarious or only slightly foliaceous, caducous.

g. Inflorescences rather narrowly pyramidal; anthers glabrous ....*38. F. adenobasis*

gg. Inflorescences broad and subcorymbose; anther-tips minutely puberulent or barbellate.

h. Leaves densely and minutely tomentulose beneath; calyx-lobes 0.15–0.17 cm. long ....*39. F. umbellata* hh. Leaves very minutely and inconspicuously puberulent-papillate beneath; calyx-lobes 0.3–0.35 cm. long............ ....*40. F. Sandwithiana*

dd. Ovary syncarpous; fruit a bicarpellary false capsule; plants of Cuba and locally in southern Mexico, Guatemala, Nicaragua and Atlantic coastal Colombia.......................................*41. F. spicata*

cc. Inflorescences densely corymbose or subumbellate, simple....*42. F. simulans*

bb. Leaves eglandular at the base of the midrib above; species of the Greater Antilles (*44* of British Honduras).

c. Corolla greenish-white.

d. Secondary venation of leaves relatively dense, subhorizontal; plants of Jamaica.......................................*43. F. floribunda*

dd. Secondary venation of leaves relatively distant, broadly arcuate; plants of British Honduras.......................*44. F. peninsularis*

cc. Corolla deep red or somewhat purplish, very rarely pale flesh-colored.

d. Follicles relatively slender, acuminate, reflexed-divaricate, 14–19 cm. long; corolla-lobes glabrous within, or the margins minutely and irregularly ciliolate; plants of Porto Rico..........*45. F. portoricensis*

dd. Follicles relatively stout and rigid, blunt, sharply divaricate, nearly rectilinear, 11–14 cm. long; corolla-lobes minutely and rather irregularly papillate within, rarely glabrate; plants of Cuba and Hispaniola...*46. F. corymbosa*

1. **Forsteronia gracilis** (Benth.) Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 101. 1860.

Thyrsanthus ? gracilis Benth. in Hook. Jour. Bot. **3**: 246. 1841; Miers, Apoc. So. Am. 99. 1878.

Stems relatively slender, glabrous, conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-elliptic, apex obtusely subcaudate-acuminate, base broadly and rather obscurely cordate, 5–11 cm. long, 3–5 cm. broad, firmly membranaceous, rather inconspicuously glandular at the base of the midrib above, glabrous, or minutely barbellate in the axils of the midrib beneath; petioles 0.4–0.7 cm. long; inflorescence rather loosely thyrsiform, both terminal and lateral, the terminal somewhat surpassing, and the lateral somewhat shorter than the subtending leaves, bearing many small, white flowers; primary peduncle glabrous, ultimate branches regularly and determinately composed, densely and minutely puberulent-papillate; pedicels 0.1–0.2 cm. long, minutely puberulent-papillate; bracts lanceolate, 0.08–0.1 cm. long, scarious; calyx-lobes ovate, acute to acuminate, 0.08–0.15 cm. long, scarious, minutely papillate without, the squamellae extremely minute, flagelliform, alternate, solitary, or evidently lacking; corolla densely and minutely puberulent-papillate without, the tube 0.05–0.11 cm. long, about 0.05–0.075 cm. in diameter at the base and 0.1–0.12 cm. in diameter at the orifice, minutely villous within at the insertion of the stamens, the lobes ovate-oblong, 0.11–0.2 cm. long, spreading, minutely papillate or essentially glabrous within; stamen filaments 0.02–0.05 cm. long, distinct and free, not agglutinated to the style, the anthers essentially included or the tips barely exserted, 0.07–0.1 cm. long, minutely barbellate; ovary ovoid, apocarpous, about 0.025 cm. long, minutely villosulose; nectaries somewhat shorter than the ovary; stigma blunt, 0.03–0.07 cm. long; follicles rather slender, essentially continuous, somewhat falcate, 24–26 cm. long, glabrous; seeds about 2.5 cm. long, the tawny coma about 4 cm. long.

BRITISH GUIANA: Moruka River, Pomeroon District, July, 1927, *Cruz 4584* (FM, MBG, NY, US); Wanama River, Northwest District, May 10–23, 1923, *Cruz 3924* (FM, MBG, NY, US); Essequibo River, Moraballi Creek, near Bartica, alt. near sea-level, Oct. 16, 1929, *Sandwith 467* (DC, NY, S, U, US); Curassawaka, date lacking, *Schomburgk 608* (Camb., DC, FM, K, TYPE, US, V, MBG, photograph and analytical drawings); Rupununi River, May, 1843, *Schomburgk 953* (B, BB, Camb., DC, V); Barima River, March, 1896, *Jenman 6965* (NY); upper Demerara River, Sept., 1887, *Jenman 4058* (NY, US).

BRAZIL: AMAZONAS: Manãos, Oct., 1912, *Kuhlmann 2832* (B, U, US); Uypiranga prope Manãos, ad ripas fluvii Rio Negro, Dec. 22, 1923, *Kuhlmann 21863* (B, U, US).

2. **Forsteronia pilosa** (Vell.) Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 99. 1860.

Echites pilosa Vell. Fl. Flum. 112. 1830; Icon. **3**: *pl. 38.* 1827.

Thyrsanthus pilosus (Vell.) A. DC. in DC. Prodr. **8**: 387. 1844; Miers, Apoc. So. Am. 106. 1878.

Thyrsanthus embelioides A. DC. loc. cit. 1844; Miers, loc. cit. 106. 1878.

Forsteronia embelioides (A. DC.) Muell.-Arg. loc. cit. 97. *pl. 50. fig. 2.* 1860.

Forsteronia meridionalis Muell.-Arg. loc. cit. 1860.

Forsteronia minutiflora Muell.-Arg. loc. cit. 99. 1860; Miers, loc. cit. 244. 1878.

Thyrsanthus meridionalis (Muell.-Arg.) Miers, loc. cit. 106. 1878.

Stems relatively slender, pilosulose when young, soon becoming glabrate and conspicuously lenticellate; leaves opposite, or rarely ternate, petiolate, narrowly oblong to oblong-lanceolate, apex acuminate, base very obscurely cordate, 5–9 cm. long, 1.2–3.0 cm. broad, membranaceous, rather inconspicuously glandular at the base of the midrib above, above glabrous or very rarely generally and minutely puberulent-papillate, beneath glabrous or minutely barbellate in the axils of the midrib, rarely generally and minutely puberulent-papillate; petioles 0.5–1.0 cm. long; inflorescence thyrsiform, terminal, infrequently both terminal and lateral, the terminal greatly surpassing, and the lateral much shorter than, the subtending leaves, bearing many small, white flowers; primary peduncle glabrous or infrequently minutely and rather irregularly puberulent-papillate, ultimate branches regularly and determinately composed, minutely puberulent-papillate, rarely pilosulose; pedicels 0.1–0.15 cm. long, minutely puberulent-papillate, rarely pilosulose; bracts lanceolate to ovate-lanceolate, 0.05-0.3 cm. long, scarious; calyx-lobes ovate, acute to acuminate, 0.08–0.15 cm. long, scarious, minutely puberulent-papillate without, the squamellae minute, numerous, indefinitely and regularly distributed, rarely evidently lacking; corolla very minutely papillate or essentially glabrous without, the tube about 0.1 cm. long, about 0.06–0.1 cm. in diameter at the base, 0.1–0.15 cm. in diameter at the orifice, villosulose within at the insertion of the stamens, the lobes oblong, 0.18–0.2 cm. long, spreading, conspicuously pilosulose within; stamen filaments about 0.05 cm. long, distinct and free, not agglutinated to the style, the anthers essentially included or the tips barely exserted, 0.07–0.09 cm. long, glabrous or essentially so; ovary ovoid, apocarpous, about 0.035 cm. long, minutely puberulent-papillate; nectaries somewhat shorter than the ovary; stigma blunt, 0.06–0.07 cm. long; follicles unknown.

BRAZIL: BAHIA: data incomplete, *Blanchet 1745* (BB, DC, MBG, photograph and analytical drawings); RIO DE JANEIRO: data incomplete, *Glaziou 4880, 15457*

(B); *Glaziou 3056* (Bx); MINAS GERAES: São João Baptista, date lacking, *Sellow s.n.* (B, MBG, photograph and analytical drawings).

The opposite or ternate phyllotaxy is apparently a valid specific criterion in no known species of *Forsteronia,* contrary to Mueller's assumption. On different specimens of *Blanchet 1745* may be found either type of phyllotaxy upon the same branch. Similar circumstances also are to be found in other species, as in *F. refracta* Muell.-Arg.

3. **Forsteronia Luschnathi** Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 98. 1860.

Forsteronia acutifolia Muell.-Arg. loc. cit. 99. 1860; Miers, Apoc. So. Am. 246. 1878.

Forsteronia acutifolia Muell.-Arg. β. *pubescens* Muell.-Arg. loc. cit. 1860.

Thyrsanthus Luschnatii (Muell.-Arg.) Miers, loc. cit. 106. 1878, sphalm.

Forsteronia protensa Miers, loc. cit. 246. 1878.

Stems relatively slender, minutely puberulent to glabrate when young, eventually glabrate and conspicuously lenticellate; leaves opposite, shortly petiolate, oblong-lanceolate to broadly elliptic, apex acuminate, base obtuse to rounded, 4–8 cm. long, 1.5–4.0 cm. broad, firmly membranaceous, glandular at the base of the midrib above, glabrous or very minutely puberulent-papillate above and beneath, rarely minutely puberulent generally; petioles 0.3–0.8 cm. long; inflorescence thyrsiform, both terminal and lateral, the terminal somewhat surpassing, and the lateral much shorter than, the subtending leaves, bearing many small, white flowers; primary peduncle minutely puberulent, ultimate branches regularly and determinately composed, densely and minutely puberulent-papillate; pedicels 0.075–0.2 cm. long, densely puberulent-papillate; bracts lanceolate, 0.08–0.25 cm. long, scarious; calyx-lobes ovate-lanceolate, acute to acuminate, 0.1–0.15 cm. long, scarious, densely puberulent-papillate without, the squamellae minute, numerous, indefinitely and regularly distributed; corolla minutely papillate without, particularly toward the tips of the lobes, the tube 0.08–0.1 cm. long, about 0.075–0.09 cm. in diameter at the base and 0.1–0.125 cm. in diameter at the orifice, minutely villosulose within at the insertion of the stamens, the lobes narrowly oblong, 0.13–0.15 cm. long, spreading, conspicuously pilosulose within; stamen filaments 0.03–0.05 cm. long, distinct and free, not agglutinated to the style, the anthers essentially included or the tips barely exserted, 0.075–0.1 cm. long, glabrous; ovary ovoid, about 0.025 cm. long, minutely hirtellous, apocarpous; nectaries somewhat shorter than the ovary; stigma 0.06–0.07 cm. long; follicles unknown.

BRAZIL: RIO DE JANEIRO: "Thelegraffenberg [Sebastiana]," Jan., 1833, *Luschnath s.n.* (Bx, TYPE, MBG, photograph and analytical drawings); "Nouvelle Fribourg [Nova Friburgo]," Oct., 1842, *Claussen 84* (D); circa Rio de Janeiro, date lacking, *Schott 5976* (V); DATA INCOMPLETE, *Gaudichaud 976* (B, D); *Widgren s.n.* (S); *Glaziou 6818* (B).

The type specimen of *F. Luschnathi* possesses ternate phyllotaxy. All others cited, including the types of *F. acutifolia* and *F. protensa* (= *F. acutifolia* β *pubescens*) are characterized by normal, opposite foliage. As has been remarked previously, an occasional ternate specimen has been found in several species of *Forsteronia,* although in all other respects typical. Abnormalities in this respect have also been found upon the same specimen with normal, opposite foliage. The occurrence of ternate phyllotaxy has therefore been interpreted as an insignificant anomaly.

4. **Forsteronia elachista** Blake, Contr. U. S. Nat. Herb. **20**: 529. *pl. 41.* 1924.

Stems relatively slender, glabrous, conspicuously lenticellate when fully mature; leaves opposite, petiolate, obovate-oblong, apex shortly and rather abruptly acuminate, base obtuse to rounded, 6–10 cm. long, 2–5 cm. broad, membranaceous, glandular at the base of the midrib above, glabrous above, beneath barbellate in the axils of the midrib to glabrate; petioles 0.7–0.8 cm. long; inflorescence laxly thyrsiform, terminal or both terminal and lateral, the terminal greatly surpassing the subtending leaves, bearing many small, white flowers; primary peduncle minutely puberulent to glabrate, the ultimate branches regularly and determinately composed, densely puberulent-papillate; pedicels 0.1–0.25 cm. long, minutely puberulent-papillate; bracts ovate or ovate-lanceolate, 0.05–0.1 cm. long, scarious; calyx-lobes ovate-deltoid, obtuse, 0.075–0.1 cm. long, scarious, densely puberulent-papillate without, the squamellae minute, numerous, regularly and indefinitely distributed; corolla densely puberulent-papillate without, the tube 0.08–0.1 cm. long, about 0.05–0.06 cm. in diameter at the base and 0.1–0.125 cm in diameter at the orifice, villosulose within at the insertion of the stamens, the lobes ovate-oblong, 0.11–0.15 cm. long, spreading, conspicuously villosulose within; stamen filaments about 0.02 cm. long, distinct and free, not agglutinated to the style, the anthers essentially included or the tips barely exserted, 0.07–0.08 cm. long, conspicuously barbellate; ovary ovoid, apocarpous, about 0.02 cm. long, minutely hirtellous; nectaries somewhat shorter than the ovary; stigma 0.075 cm. long; follicles unknown.

COLOMBIA: BOYACA: exact locality and date lacking, *Lawrance 453* (FM).

VENEZUELA: CARABOBO: Upper Guaremales, road from Puerto Cabello to San Felipe, in forest and clearings, alt. 100–500 m., July 2, 1920, *Pittier 8918* (G, US, TYPE, MBG, photograph and analytical drawings); DATA INCOMPLETE: *Linden 267* (D).

5. **Forsteronia graciloides** Woodson, spec. nov.

Suffruticosa volubilis; ramulis gracilibus glabris maturitate conspicue lenticellatis; foliis oppositis petiolatis obovatis vel obovato-oblongis apice breviter abrupteque subcaudato-acuminatis basi obtusis 5–8 cm. longis 2–4 cm. latis firme membranaceis supra glabris nervo medio basi pauciglanduligero subtus saepe irregulariter inconspicueque puberulis saepius glabratis; petiolis 0.4-0.8 cm. longis; inflorescentiis laxe thyrsiformibus et terminalibus et lateralibus folia saepius multo superantibus flores multas albidas gerentibus; pedunculis omnino minute puberulo-papillatis vel basi glabratis ultimis regulariter cymoso-compositis; pedicellis 0.1–0.2 cm. longis minute puberulo-papillatis; bracteis ovatis vel ovato-lanceolatis 0.05–0.15 cm. longis scariaceis; calycis laciniis lanceolatis vel ovato-lanceolatis apice acutis acuminatisve 0.075–0.1 cm. longis scariaceis minute puberulo-papillatis intus cum squamellis minutissimis paucis alternatis; corollae extus

dense puberulo-papillatae tubo 0.075–0.1 cm. longo basi ca. 0.05-0.075 cm. diametro faucibus ca. 0.1–0.125 cm. diametro metientibus intus prope insertionem staminum villosulis lobis late oblongis obtusis 0.1–0.11 cm. longis patulis intus conspicue pilosulis; filamentis staminum 0.01–0.02 cm. longis liberis haud agglutinatis antheris paululo exsertis 0.07–0.08 cm. longis conspicue barbellatis; ovario ovoideo apocarpo ca. 0.02 cm. longo minute papillato; nectariis ovario paululo brevioribus; stigmate 0.06–0.08 cm. longo; folliculis crassiusculis obscure articulatis falcatis 43–47 cm. longis glabris; seminibus 2.0–2.5 cm. longis como pallide aurantiaco ca. 3 cm. longo.

Stems relatively slender, glabrous, conspicuously lenticellate when fully mature; leaves opposite, petiolate, obovate to obovate-oblong, apex shortly and abruptly subcaudate-acuminate, base obtuse, 5–8 cm. long, 2–4 cm. broad, firmly membranaceous, above glabrous, glandular at the base of the midrib, beneath irregularly and inconspicuously puberulent, particularly in the axils of the midrib, frequently glabrate; petioles 0.4–0.8 cm. long; inflorescence laxly thyrsiform, both terminal and lateral, the terminal conspicuously surpassing the subtending leaves, bearing many small, white flowers; primary peduncle minutely puberulent-papillate to glabrate at the base, the ultimate branches regularly and determinately composed, densely puberulent-papillate; pedicels 0.1–0.2 cm. long, densely puberulent-papillate; bracts ovate to ovate-lanceolate, 0.05–0.15 cm. long, scarious; calyx-lobes lanceolate to ovate-lanceolate, acute to acuminate at the apex, 0.075–0.1 cm. long, scarious, densely and minutely puberulent-papillate, squamellae very minute, relatively few, in alternate groups; corolla densely puberulent-papillate without, the tube 0.075–0.1 cm. long, about 0.05–0.075 cm. in diameter at the base and 0.1–0.125 cm. in diameter at the orifice, villosulose within at the insertion of the stamens, the lobes broadly oblong, obtuse, 0.1–0.11 cm. long, spreading, conspicuously pilosulose within; stamen filaments 0.01–0.02 cm. long, distinct and separate, not agglutinated to the style, the anthers essentially included or the tips barely exserted, 0.07–0.08 cm. long, con-

spicuously barbellate; ovary ovoid, apocarpous, about 0.02 cm. long, minutely papillate; nectaries somewhat shorter than the ovary; stigma 0.06–0.08 cm. long; follicles rather stout, obscurely and rather irregularly articulated, falcate, 43–47 cm. long, glabrous; seeds 2.0–2.5 cm. long, the pale tawny coma about 3 cm. long.

PERU: LORETO: forest, San Ramon, near Yurimaguas, Nov. 4, 1929, *Williams 4547* (FM, MBG, TYPE); Yurimaguas, Oct. 24, 1929, *Williams 4011* (FM, MBG); prope Tarapoto, 1855–56, *Spruce 4493* (B, BB, C, D, G, V); Flutfreier Hochwald, Mündung d. Santiago, alt. 160 m., Oct. 28, 1924, *Tessmann 4413* (B, D); SAN MARTIN: Pongo de Cainarachi, Rio Cainarachi, tributary of Rio Huallaga, alt. 230 m., Sept.–Oct., 1932, *Klug 2761* (NY); JUNIN: La Merced im Chanchamayo-Thal, lichter Wald, alt. 1000 m., Dec., 1902, *Weberbauer 1888* (B).

This species differs from the complementary species of the north Atlantic coastal region of South America, *F. elachista* Blake, not only in the key characters, but also in such characters as the corolla-lobes, which are proportionally longer and narrower, and the ovary, which is minutely papillate, whilst conspicuously hirtellous in the latter species.

6. **Forsteronia Gardneri** (A. DC.) Muell.-Arg. in Mart. Fl. Bras. **6**¹: 100. 1860.

Thyrsanthus Gardneri A. DC. in DC. Prodr. **8**: 387. 1844; Miers, Apoc. So. Am. 96. 1878.

Stems relatively slender, minutely and irregularly pilosulose when young, soon becoming glabrate and conspicuously lenticellate; leaves opposite, shortly petiolate, narrowly oblong-elliptic, apex acuminate, base rounded, 7–14 cm. long, 1.5–4.0 cm. broad, firmly membranaceous to subcoriaceous, glabrous, inconspicuously glandular at the base of the midrib above; petioles 0.3–0.6 cm. long, minutely puberulent-pilosulose; inflorescence laxly thyrsiform, terminal or both terminal and lateral, in either case conspicuously surpassing the subtending leaves, bearing many small, white flowers; primary peduncle pilosulose, ultimate branches regularly and determinately composed, puberulent-papillate to pilosulose; pedicels 0.05–0.1 cm. long, puberulent-papillate; bracts ovate-lanceolate, 0.05–0.2 cm. long, scarious; calyx-lobes ovate, acute, 0.1–0.11 cm. long, scarious, puberulent-papillate without, the squamellae in groups of 2–4 opposite the calyx-lobes, or irregularly and indefinitely distributed; corolla sparsely and minutely pilosulose-papillate without, particularly toward the tips of the lobes, otherwise usually essentially glabrate, the tube 0.11–0.15 cm. long, about 0.08 cm. in diameter at the base and 0.15–0.175 cm. in diameter at the orifice, villosulose within at the insertion of the stamens, the lobes rather narrowly oblong, 0.15–0.2 cm. long, spreading, conspicuously pilosulose within; stamen filaments 0.03–0.05 cm. long, distinct and free, not agglutinated to the style, the anthers essentially included or only the tips barely exserted, 0.1–0.12 cm. long, glabrous; ovary ovoid, apocarpous, about 0.03 cm. long, minutely papillate; nectaries about half as long as the ovary; stigma 0.1–0.12 cm. long; follicles unknown.

BRAZIL: GOYAZ: exact locality lacking, 1842, *Gardner 3891* (B, BB, BM, Camb., D, DC, NY, V, TYPE, MBG, photograph and analytical drawings).

7. **Forsteronia affinis** Muell.-Arg. in Mart. Fl. Bras. 6^1: 100. *pl. 30.* 1860.

Thyrsanthus affinis (Muell.-Arg.) Miers, Apoc. So. Am. 101. 1878.

Stems relatively stout, glabrous, conspicuously lenticellate when fully mature; leaves opposite, petiolate, ovate-elliptic, apex acuminate, base broadly obtuse or rounded, 8–12 cm. long, 3.0–4.5 cm. broad, rather delicately membranaceous, glandular at the base of the midrib above, glabrous, or very inconspicuously and minutely barbellate in the axils of the midrib beneath; petioles 0.8–0.9 cm. long; inflorescence thyrsiform, terminal, or both terminal and lateral, the terminal conspicuously surpassing, and the lateral somewhat shorter than, the subtending leaves, bearing many small, white flowers; primary peduncle glabrous or very minutely puberulent-papillate toward the tip, ultimate branches indefinitely congested, minutely puberulent-papillate; pedicels 0.08–0.1 cm. long, minutely puberulent-papillate; bracts lanceolate, 0.02-0.05 cm. long, scarious; calyx-lobes ovate-trigonal, acute, 0.07–0.1 cm. long, scarious, minutely papillate or very minutely puberulent-

papillate, the squamellae evidently lacking; corolla densely papillate without, the tube 0.075–0.1 cm. long, about 0.05–0.075 cm. in diameter at the base and 0.1–0.125 cm. in diameter at the orifice, minutely villosulose within at the insertion of the stamens, the lobes oblong-elliptic, 0.12–0.15 cm. long, spreading, papillate within; stamen filaments 0.02–0.03 cm. long, distinct and free, not agglutinated to the style, the anthers essentially included or the tips barely exserted, 0.06–0.08 cm. long, glabrous; ovary ovoid, apocarpous, about 0.03 cm. long, minutely puberulent; nectaries somewhat shorter than the ovary; stigma 0.07–0.08 cm. long; follicles unknown.

BRAZIL: AMAZONAS: in sylvis ad Ega, Rio Negro, date lacking, *Martius 2960* (M, TYPE, MBG, photograph and analytical drawings).

8. **Forsteronia rufa** Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 100. *pl. 31. fig. 1.* 1860; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 187. 1895.

Thyrsanthus rufus (Muell.-Arg.) Miers, Apoc. So. Am. 104. 1878.

Forsteronia rufa Muell.-Arg. var. *subglabra* Malme, Arkiv f. Bot. **22A**^{2}: 14. 1928.

Stems relatively stout, densely ferruginous-tomentulose when young, eventually becoming glabrate and conspicuously lenticellate when fully mature; leaves opposite, infrequently ternate, shortly petiolate, ovate-, oblong-, or obovate-elliptic, apex shortly and rather abruptly acuminate, base usually obscurely cordate, rarely broadly cuneate, 5–11 cm. long, 2.5–6.0 cm. broad, firmly membranaceous, above more or less densely ferruginous-hirtellous, particularly along the veins, frequently glabrate or essentially glabrous, inconspicuously glandular at the base of the midrib, beneath more or less densely ferruginous-tomentulose or -puberulent, particularly along the veins, rarely nearly glabrate; petioles 0.4–0.8 cm. long, the indument as upon the stem; inflorescence laxly thyrsiform, terminal, frequently lateral as well, greatly surpassing the subtending leaves, bearing many small, white flowers; primary peduncle ferruginous-tomentulose, ultimate branches minutely ferruginous-tomentulose, regularly and determinately composed; pedicels 0.08–1.5 cm. long, minutely ferruginous-tomentulose; bracts lanceolate to ovate-lanceolate, 0.015–0.05 cm. long, scarious; calyx-lobes lanceolate to ovate-lanceolate, acuminate, minutely puberulent-papillate to ferruginous-hirtellous without, 0.13–0.2 cm. long, the squamellae in opposite groups of 2–5; corolla glabrous without, infrequently somewhat puberulent-papillate to minutely barbellate at the tips of the lobes, the tube 0.13–0.2 cm. long, about 0.05–0.75 cm. in diameter at the base and 0.15–0.175 cm. in diameter at the orifice, villosulose within, the lobes narrowly oblong, 0.2–0.4 cm. long, widely spreading, conspicuously pilosulose within; stamen filaments 0.06–0.1 cm. long, distinct and free, not agglutinated to the style, the anthers essentially included or the tips barely exserted, 0.1–0.15 cm. long, glabrous; ovary ovoid, apocarpous, about 0.03 cm. long, minutely ferruginous-hirtellous; nectaries slightly shorter than the ovary; stigma 0.1–0.18 cm. long; follicles relatively stout, very conspicuously and distantly moniliform, tortuous, 37–50 cm. long, glabrous; seeds 0.8–1.0 cm. long, the pale tawny coma 3.5–4.5 cm. long.

BRAZIL: MINAS GERAES: exact locality lacking, 1834, *Ackermann s.n.* (B, Bx); RIO DE JANEIRO: Organ Mts., date lacking, *Gardner 530* (Camb., D, TYPE, NY, US, V, MBG, photograph); Vargem, Organ Mts., Jan., 1838, *Miers 4049* (US); data incomplete: *Glaziou 6905* (B, Bx); *Glaziou 5939* (B, FM, US); *Glaziou 8799* (B); *Glaziou 14065* (B); SÃO PAULO: sepibus sylvestribus in Serra do Mar et versus fl. Paraiba, date lacking, *Martius s.n.* (M); sylvis Capoes udis, Jan., year lacking, *Martius s.n.* (M); Butantan, Feb. 22, 1918, *Hoehne 1512* (B); Iguape, April 25, 1918, *Hoehne 1841* (B); PARANA: Morretes, ad marginem silvae primaevae, alt. ca. 40 m., Jan. 4, 1914, *Dusen 14272* (D, US); Jacarehy, in silva primaeva, Febr. 11, 1915, *Dusen 16662* (D, US); SANTA CATHARINA: am Waldrand, Ins. São Francisco, Febr., 1885, *Ule 350* (B); Waldrand bei Itajahy, Jan., 1886, *Ule 510* (B); am Capivary bei Tubarão, Jan., 1889, *Ule 1051* (B, US); DATA INCOMPLETE: *Sellow 211* (B); *Sellow 358* (B); *Sellow 219* (B); *Sellow 543* (B); *Sellow s.n.* (B); *Riedel s.n.* (B, BB, V).

This is probably the most variable species of the genus. The dimensions of the floral parts are particularly puzzling in this regard, as well as the superficial aspect of the inflorescence as a whole. Especially noteworthy are the two specimens of *Ule 1051* from the province of Santa Catharina, which vary from the norm of the species in the cuneate bases of the leaves and a somewhat ashy tinge of the ferruginous indument.

9. **Forsteronia Acouci** (Aubl.) A. DC. in DC. Prodr. **8**: 439. 1844.

Apocynum Acouci Aubl. Hist. Pl. Gui. Fr. **1**: 274; **3**: *pl. 107.* 1775.

Apocynum paniculatum Lam. Encycl. **1**: 214. 1783.

Thyrsanthus Schomburgkii Benth. in Hook. Jour. Bot. **3**: 245. 1841; A. DC. loc. cit. 387. 1844; Miers, Apoc. So. Am. 94. 1878.

Forsteronia Schomburgkii (Benth.) Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 107. 1860, not A. DC.

Thyrsanthus Acouci (Aubl.) Miers, loc. cit. 98. 1878.

Stems relatively stout, glabrous, conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong- to ovate- or obovate-elliptic, apex shortly and abruptly acuminate, base broadly obtuse or rounded, 8–15 cm. long, 3–7 cm. broad, membranaceous, glabrous, inconspicuously glandular at the base of the midrib above; petioles 0.3–0.7 cm. long; inflorescence thyrsiform, both terminal and lateral, usually somewhat shorter than the subtending leaves, bearing many small, white flowers; primary peduncle minutely puberulent-papillate to glabrate, ultimate branches congested, but regularly and determinately composed, densely and minutely puberulent-papillate; pedicels 0.05-0.1 cm. long, very minutely puberulent-papillate; bracts ovate to ovate-lanceolate, 0.07–0.15 cm. long, scarious; calyx-lobes ovate to ovate-lanceolate, acute to broadly acuminate, 0.1–0.17 cm. long, scarious, densely papillate, the squamellae solitary or rarely paired, alternate; corolla minutely puberulent-papillate without, particularly toward the tips of the lobes, the tube 0.1–0.2 cm. long, about 0.05–0.1 cm. in diameter at the base and 0.175–0.2 cm. in diameter at the orifice, villosulose within at the insertion of the stamens, the lobes oblong or ovate-oblong, 0.09–0.13 cm. long, only slightly spreading, minutely papillate within; stamen filaments 0.06–0.1 cm. long, distinct and free, not agglutinated to the style, the anthers essentially included or the tips barely exserted, 0.15–0.2 cm. long, barbellate, or very minutely papillate at the tips; ovary ovoid, apocarpous, about 0.05 cm. long, minutely puberulent; nectaries about equalling the ovary; stigma 0.13–0.2 cm. long; follicles unknown.

TRINIDAD: wet forest border, near Caroni River, south of Arima, April 11, 1921, *Britton & Britton 2900* (NY).

BRITISH GUIANA: data incomplete, *Schomburgk 37* (D, V); *Schomburgk 557* (B, BB, Camb., D, NY, US, V); *Schomburgk 782* (B, BB, Camb., D, V); rip. fl. Barima, Oct., 1843, *Schomburgk 1514* (B).

DUTCH GUIANA: fl. Nickerie, July, 1900, *Tulleken 90* (U); near the 2n or Oude Ryweg, Paramaribo, May 23, 1916, *Samuels 439* (B, G, NY); Paramaribo, 1850, *Wullschläge 454* (V); fluv. Lawa, Dec., 1903, *Versteeg 415* (U); Jagtlust-Meerzog, fluv. Suriname, Jan. 8, 1924, *Collector Indigenous 8F* (B, U); DATA INCOMPLETE: *Hostmann & Kappler 569* (U); *Hostmann 569a* (BB, D, FM, S); *Hostmann 6118* (V); *Hostmann & Kappler 1236* (B, BB, D, M, S, V).

FRENCH GUIANA: data incomplete, *leBlond* [?] *379* (B, C).

Aublet's illustration of *Apocynum Acouci* leaves little doubt concerning its association with *Thyrsanthus Schomburgkii* Benth., a common plant of the Guianas. The association of *Apocynum paniculatum* Lam. with these species is less secure, and is based only in part upon Lamarck's inconclusive diagnosis, consideration being given to the previous disposition by A. de Candolle and Miers.

10. Forsteronia Benthamiana Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 106. 1860; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 187. 1895.

Thyrsanthus Benthamiana (Muell.-Arg.) Miers, Apoc. So. Am. 95. 1878.

Stems relatively stout, glabrous, conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-elliptic to broadly oval, apex shortly and abruptly acuminate to obtuse or rounded, base broadly obtuse or rounded, 8–18 cm. long, 2.5–8.0 cm. broad, coriaceous or subcoriaceous, somewhat nitidulous above, inconspicuously glandular at the base of the midrib, glabrous throughout; petioles 0.3–0.7 cm. long; inflorescence thyrsiform, both terminal and lateral, about equalling, or the terminal greatly surpassing, the subtending leaves, bearing many small, white flowers; primary peduncle minutely puberulent-papillate to glabrate below, ultimate branches regularly and determinately composed, densely puberulent-papillate; pedicels 0.1–0.3 cm. long, densely and minutely puberulent-papillate; bracts ovate to ovate-lanceolate, scarious, 0.05–0.35 cm. long; calyx-lobes ovate to ovate-lanceolate, acute to obtuse, 0.1–0.2 cm. long, scarious, minutely puberulent or puberulent-papillate without, squamellae solitary, alternate; corolla minutely and irregularly papillate to essentially glabrous without, the tube 0.15–0.3 cm. long, about 0.1–0.15 cm. in diameter at the base and 0.175–0.2 cm. in diameter at the orifice, villosulose within at the insertion of the stamens, the lobes oblong to ovate-oblong, 0.2–0.3 cm. long, spreading, very minutely and irregularly papillate to essentially glabrate within; stamen filaments 0.06–0.13 cm. long, distinct and free, not agglutinated to the style, the anthers slightly exserted, 0.15–0.2 cm. long, minutely barbellate at the tips; ovary ovoid, apocarpous, minutely puberulent-papillate, about 0.05 cm. long; nectaries much shorter than the ovary; stigma 0.1–0.18 cm. long; follicles relatively stout, rather inconspicuously undulated, subparallel to tortuous, frequently united at the tips, 21–23 cm. long, glabrous; seeds 2.0–2.3 cm. long, the bright tawny coma 1.3–2.0 cm. long.

BRAZIL: PARA: Juruty Velho, silva locis altis, July 29, 1927, *Ducke 21603* (B); Oriximina, Rio Trombetas infer., silva secundaria, Sept. 17, 1910, *Ducke 21639* (B, US); AMAZONAS: prope San Carlos, ad Rio Negro, 1853-4, *Spruce 3481* (B, BB, C, D, G, M, NY, MBG, photograph and analytical drawings); Bôa Vista, Rio Branco super., ad ripas fluminis, July, 1913, *Kuhlmann 3647* (B, U, US); Manãos, ripis paludosis rivuli sylvestris, Dec. 8, 1927, *Ducke 21612* (B); ad ripis inter Campinho et Bôa Vista, Rio Branco, Nov., 1913, *Kuhlmann 3648* (B); Teffe, ad fauces lacus, June 23, 1906, *Ducke 21766* (B, US); Manãos, ad ripis Rio Negro prope faucem flum. Taruma, April 26, 1911, *Ducke 21758* (B, US); DATA INCOMPLETE: *Glaziou 9932* (C).

PERU: LORETO: forest, Mishuyacu, near Iquitos, alt. 100 m., Febr.–March, 1930, *Klug 1053* (FM, NY, US); Stromgebiet des Maranon am Pongo de Manseriche, 1924, *Tessmann 4805* (S); Iquitos, Urwald, June 30, 1924, *Tessmann 3639* (B, D); Stromgebiet des Maranon Santiago-Mündung am Pongo de Manseriche, 1924, *Tessmann 4461* (D, S); Stromgebiet des Maranon von Iquitos, 1924, *Tessmann 5128* (B, D).

11. **Forsteronia viridescens** Blake, Contr. Gray Herb. **52:** 80. 1917.

Stems relatively stout, glabrous or essentially so, conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-elliptic, apex very shortly and abruptly acuminate, base broadly obtuse or rounded, 9–13 cm. long, 2.5–6.0 cm. broad, coriaceous or subcoriaceous, somewhat nitidulous above, glandular at the base of the midrib above, glabrous throughout; petioles 0.3–0.6 cm. long; inflorescence thyrsiform, terminal, rarely lateral as well, somewhat shorter than the subtending leaves, bearing many small, greenish-white flowers; primary peduncle minutely puberulent-papillate to glabrate below, ultimate branches regularly and determinately composed, minutely puberulent-papillate; pedicels 0.09–0.15 cm. long, very minutely puberulent-papillate; bracts ovate to ovate-lanceolate, scarious, 0.09–0.18 cm. long; calyx-lobes ovate, acute, 0.1–0.13 cm. long, scarious, very minutely puberulent-papillate, the squamellae minute, solitary, alternate, occasionally lacking; corolla densely and uniformly puberulent-papillate without, the tube 0.15-0.17 cm. long, about 0.075 cm. in diameter at the base and 0.175-0.2 cm. in diameter at the orifice, villosulose within, the lobes broadly oblong to ovate-oblong, 0.18–0.2 cm. long, spreading, minutely puberulent within; stamen filaments 0.05–0.08 cm. long, distinct and free, not agglutinated to the style, the anthers slightly exserted, 0.15–0.17 cm. long, minutely and sparsely barbellate at the tips; ovary ovoid, apocarpous, about 0.05 cm. long, papillate; nectaries much shorter than the ovary; stigma 0.12–0.13 cm. long; follicles unknown.

BRITISH HONDURAS: forest near Manatee Lagoon, July 7, 1906, *Peck 450* (G, TYPE, MBG, photograph and analytical drawings); secondary forest, rare, Middlesex, alt. 200 ft., Sept. 20, 1929, *Schipp 360* (B, D, FM, MBG, NY).

12. **Forsteronia guyanensis** Muell.-Arg. Linnaea **30**: 414. 1860.

Thyrsanthus Guyanensis (Muell.-Arg.) Miers, Apoc. So. Am. 97. 1878.

Stems relatively stout, minutely puberulent when very young, soon becoming glabrate and conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, elliptic-obovate, apex very abruptly and shortly acuminate to obtuse, base obtusely cuneate, 3–9 cm. long, 1.5–3.5 cm. broad, coriaceous or subcoriaceous, rather inconspicuously glandular at the base of the midrib above, glabrous throughout; petioles

0.2–0.5 cm. long; inflorescence thyrsiform, both terminal and lateral, equalling to conspicuously surpassing the subtending leaves, bearing many small, white flowers; primary peduncle densely papillate to glabrate below, ultimate branches regularly and determinately composed, densely papillate; pedicels 0.09–0.2 cm. long, densely papillate; bracts ovate to ovate-lanceolate, scarious, 0.08–0.2 cm. long; calyx-lobes ovate, acute to acuminate, 0.1–0.14 cm. long, scarious, densely and very minutely puberulent-papillate without, the squamellae usually lacking, occasionally very minute, solitary, and alternate; corolla minutely puberulent-papillate without, the tube 0.15–0.2 cm. long, about 0.075–0.1 cm. in diameter at the base and 0.17–0.2 cm. in diameter at the orifice, minutely puberulent-papillate within near the orifice, the lobes broadly oblong to ovate-oblong, 0.15–0.22 cm. long, spreading, minutely and densely papillate or puberulent-papillate within; stamen filaments 0.07–0.1 cm. long, distinct and free, not agglutinated to the style, the anthers slightly exserted, 0.15–0.18 cm. long, glabrous; ovary ovoid, minutely puberulent, apocarpous; nectaries about equalling the ovary; stigma 0.12–0.15 cm. long; follicles very slender and tortuous, obscurely and indefinitely articulated or essentially entire, 45–50 cm. long, very densely and minutely ferruginous-papillate; seeds 1.5 cm. long, the bright tawny coma 2.8–3.2 cm. long.

BRITISH GUIANA: rip. fl. Sururu, Sept., 1843, *Schomburgk 1446* (B, ISOTYPE, MBG, photograph and analytical drawings); exact locality lacking, 1844, *Schomburgk 821* (BB, Camb., D); mixed forest, Essequibo River, Moraballi Creek, near Bartica, alt. near sea-level, Oct. 9, 1929, *Sandwith 405* (NY, S, U, US); "Demarara," date lacking, *Jenman 5091* (K, NY).

DUTCH GUIANA: in summus monte Brownsberg, July 28, 1924, *Stahel & Gonggrijp 6624* (U); in silva pr. Voltzberg, fluv. Coppename, July–Sept., 1920, *Pulle 291* (B, U); in silva pr. Avanaverovallen, fluv. Kabalebo, July–Sept., 1920, *Pulle 453* (B, NY, U); fluv. Coppename inf., Aug., 1901, *Went 109* (U).

FRENCH GUIANA: Karouany, 1858, *Sagot 1067* (BB, Bx, U); data incomplete: *leBlond* [?] *381* (B); *Martin s.n.* (B); *Poiteau s.n.* (D); *Melonon 460* (B).

BRAZIL: PARA: Peixeboi ad viam ferream Belem-Bragança, silva, Oct. 30, 1907, *Siqueira 21623* (B, U, US).

13. Forsteronia brevifolia Mgf. Notizblatt **10**: 1038. 1930.

Stems relatively stout, minutely papillate when very young, soon becoming glabrate and conspicuously lenticellate when fully mature; leaves opposite, very shortly petiolate, broadly elliptic to obovate-elliptic, apex very shortly and abruptly acuminate to obtuse, base broadly obtuse or rounded, 4–7 cm. long, 2.0–3.5 cm. broad, coriaceous, somewhat nitidulous above and inconspicuously glandular at the base of the midrib, glabrous throughout; petioles 0.3–0.5 cm. long; inflorescence corymbose-thyrsiform, flat-topped or only somewhat convex, both terminal and lateral, about equalling or somewhat shorter than the subtending leaves, bearing many small, white flowers; primary peduncle very densely and minutely puberulent-papillate, ultimate branches regularly and determinately composed, densely puberulent-papillate; pedicels 0.1–0.2 cm. long, densely and minutely puberulent-papillate; bracts ovate-lanceolate, 0.03–0.075 cm. long, scarious; calyx-lobes ovate to ovate-deltoid, obtuse or rounded, 0.1–0.125 cm. long, scarious, minutely puberulent-papillate without, the squamellae minute, solitary or rarely paired, alternate, occasionally lacking; corolla rather irregularly puberulent-papillate without, the tube 0.13–0.15 cm. long, about 0.075–0.1 cm. in diameter at the base and 0.15–0.2 cm. in diameter at the orifice, villosulose within, the lobes oblong to oblong-lanceolate, 0.25–0.275 cm. long, only slightly spreading, minutely puberulent to essentially glabrous within; stamen filaments 0.03–0.05 cm. long, distinct and free, not agglutinated to the style, the anthers slightly exserted, 0.15–0.175 cm. long, glabrous; ovary ovoid, apocarpous, minutely papillate; nectaries somewhat shorter than the ovary; stigma 0.2 cm. long; follicles unknown.

BRAZIL: AMAZONAS: Tocantins, silva non inundabili, Nov. 13, 1927, *Ducke 21614* (B, TYPE, US, MBG, photograph and analytical drawings).

PERU: LORETO: forest, Mishuyacu, near Iquitos, alt. 100 m., Dec., 1929, *Klug 640* (FM, NY, US).

14. **Forsteronia Wilsonii** (Griseb.) Woodson, comb. nov.

Thyrsanthus Wilsonii Griseb. Fl. Brit. W. I. 412. 1864.

Stems relatively slender, glabrous, rather inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, elliptic, apex rather abruptly and acutely subcaudate-acuminate, base broadly obtuse, 4–11 cm. long, 1.5–4.0 cm. broad, membranaceous, glabrous, inconspicuously glandular at the base of the midrib above; petioles 0.2–0.5 cm. long; inflorescence thyrsiform, terminal, somewhat shorter than the subtending leaves, bearing many small, white flowers; primary peduncle minutely puberulent, ultimate branches somewhat congested, minutely puberulent to puberulent-papillate; pedicels about 0.1 cm. long, puberulent-papillate; bracts linear to linear-lanceolate, 0.1–0.4 cm. long, slightly foliaceous; calyx-lobes linear to linear-lanceolate, acuminate, 0.38–0.4 cm. long, slightly foliaceous, rather irregularly and sparsely puberulent-papillate, the squamellae very minute, numerous, regularly and indefinitely distributed; corolla irregularly and sparsely puberulent-papillate without, the tube 0.12–0.15 cm. long, about 0.07–0.08 cm. in diameter at the base and 0.15–0.175 cm. in diameter at the orifice, villosulose within, the lobes ovate-oblong, 0.2–0.25 cm. long, puberulent-papillate within, widely spreading; stamen filaments 0.05 cm. long, distinct and free, not agglutinated to the style, the anthers slightly exserted, 0.15–0.175 cm. long, glabrous; ovary ovoid, apocarpous, about 0.05 cm. long, minutely puberulent-papillate; stigma 0.12–0.15 cm. long; nectaries much shorter than the ovary; follicles unknown.

JAMAICA: on trees, Manchester, date lacking, *Wilson s.n.* (K, TYPE, NY, MEROTYPE and analytical drawings); vicinity of Mandeville, April 26–30, 1910, *Crawford 714* (NY, MBG, photograph and analytical drawings); data incomplete, *Bertero s.n.* (B).

This combination has been ascribed to Bentham & Hooker upon herbarium labels, although there appears to be no actual basis for such citation.

15. **Forsteronia diospyrifolia** Muell.-Arg. Linnaea **30**: 415. 1860.

Thyrsanthus diospyrifolius (Muell.-Arg.) Miers, Apoc. So. Am. 96. 1878.

Stems relatively stout, glabrous or minutely puberulent-papillate when very young, conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, obovate- to elliptic-oblong, apex abruptly acute to obtuse, base broadly obtuse or rounded, 7–12 cm. long, 2.5–5.0 cm. broad, heavily coriaceous, glabrous, eglandular; petioles 0.4–0.6 cm. long; inflorescence thyrsiform, both terminal and lateral, about equalling or somewhat shorter than the subtending leaves, bearing many small, white flowers; primary peduncle minutely and rather sparsely puberulent to glabrate, ultimate branches congested, puberulent to puberulent-papillate; pedicels 0.03–0.05 cm. long, puberulent-papillate; bracts ovate, 0.05–0.35 cm. long, scarious; calyx-lobes ovate, acute to obtuse, 0.175–0.3 cm. long, scarious, rather irregularly puberulent-papillate without, the squamellae solitary, alternate, minute; corolla puberulent-papillate without, the tube 0.125–0.15 cm. long, about 0.1 cm. in diameter at the base and 0.2 cm. in diameter at the orifice, villosulose within, the lobes oblong-elliptic, 0.175–0.2 cm. long, somewhat spreading, minutely puberulent-papillate within; stamen filaments 0.08–0.1 cm. long, distinct and free, not agglutinated to the style, the anthers slightly exserted, 0.175–0.2 cm. long, glabrous or very minutely barbellate; ovary apocarpous, ovoid, about 0.075 cm. long, minutely papillate; stigma 0.15 cm. long; nectaries somewhat shorter than the ovary; follicles unknown.

BRITISH GUIANA: in savannis, Oct., 1846, *Schomburgk 854* (B, TYPE, MBG, photograph and analytical drawings); Roraima, 1842–3, *Schomburgk 725* (D).

16. Forsteronia Riedelii Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 103. 1860; Miers, Apoc. So. Am. 245. 1878.

Stems relatively stout, glabrous, conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-elliptic, apex abruptly and obtusely subcaudate-acuminate, base broadly obtuse, 5–9 cm. long, 2.5–3.5 cm. broad, firmly membranaceous, glabrous, eglandular; petioles 0.5–0.8 cm. long; inflorescence thyrsiform, both terminal and lateral, somewhat shorter than the subtending leaves, bearing many small, white flowers; primary peduncle minutely puberulent-papillate, ultimate branches regularly and determinately composed, minutely puberulent-papillate; pedicels 0.2–0.3 cm. long, minutely puberulent-papillate; bracts ovate to ovate-lanceolate, 0.08–0.15 cm. long, scarious; calyx-lobes ovate, acute, 0.1–0.12 cm. long, scarious, minutely puberulent-papillate, the squamellae solitary, alternate, minute; corolla minutely puberulent-papillate without, the tube 0.125–0.2 cm. long, about 0.075–0.1 cm. in diameter at the base and 0.2–0.3 cm. in diameter at the orifice, villosulose within, the lobes oblong-ovate, slightly reflexed, 0.2–0.25 cm. long, puberulent within; stamen filaments 0.05 cm. long, distinct and free, not agglutinated to the style, the anthers slightly exserted, about 0.2 cm. long, glabrous; ovary ovoid, apocarpous, about 0.075 cm. long, hirtellous; stigma 0.15–0.2 cm. long; nectaries somewhat shorter than the ovary; follicles unknown.

BRAZIL: AMAZONAS: silva non inundabili circa cataractas flum. Taruma superioris, Manãos, Oct. 17, 1929, *Ducke 22429* (B); dense forest, Manãos, alt. 25 m., Oct. 17, 1929, *Killip & Smith 30151* (MBG, NY, US).

The type specimen of this species has not been available for study. The specimens collected by Ducke and Killip & Smith from the vicinity of Manãos accord well with the original description of *F. Riedelii,* the type specimen of which, collected by Riedel, is cited as from the Serra d'Estrella. It will not be surprising, therefore, if the specimens cited from Amazonas may eventually be proved to represent a distinct species.

17. **Forsteronia Duckei** Mgf. Notizblatt **9**: 962. 1926.

Stems relatively stout, glabrous, or very minutely puberulent when young, conspicuously lenticellate when fully mature; leaves opposite, very shortly petiolate, oblong- to ovate-elliptic, apex very shortly and abruptly acuminate to obtuse, base very broadly obtuse to rounded, 9–16 cm. long, 4–5 cm. broad, firmly membranaceous, glabrous, inconspicuously glandular at the base of the midrib above; petioles 0.3–0.35 cm. long; inflorescence thyrsiform, terminal, about equalling the subtending leaves or somewhat shorter, bearing many small, white flowers; primary peduncle minutely ferruginous-puberulent, ultimate branches regularly and determinately composed, minutely and densely puberulent-papillate; pedicels 0.1–0.15 cm. long, minutely puberulent-papillate; bracts ovate, 0.01–0.025 cm. long, scarious; calyx-lobes ovate-reniform, broadly obtuse or rounded, 0.075–0.1 cm. long, scarious, densely and minutely puberulent-papillate, the squamellae very minute, solitary, alternate; corolla densely and minutely puberulent-papillate without, the tube 0.08–0.1 cm. long, about 0.075 cm. in diameter at the base and 0.125 cm. in diameter at the orifice, villosulose within, the lobes oblong-elliptic, 0.2 cm. long, essentially glabrous within; stamen filaments 0.05 cm. long, the anthers slightly exserted, about 0.125 cm. long, glabrous; ovary ovoid, minutely papillate, about 0.07 cm. long; stigma 0.2 cm. long, slightly exserted beyond the connate anthers; nectaries somewhat shorter than the ovary; follicles unknown.

BRAZIL: PARA: ad ripas fluminis Anajaz, in parte occidentali insula Marajo, Nov. 25, 1922, *Ducke 17478* (B, TYPE, US, MBG, photograph and analytical drawings).

18. **Forsteronia laurifolia** (Benth.) A. DC. in DC. Prodr. **8**: 438. 1844; Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 106. 1860.

Thenardia (?) laurifolia Benth. in Hook. Jour. Bot. **3**: 246. 1841.

Thyrsanthus laurifolius (Benth.) Miers, Apoc. So. Am. 94. 1878.

Stems relatively stout, glabrous, inconspicuously lenticellate when fully mature; leaves opposite, petiolate, oblong to oblong- elliptic, apex shortly acuminate, base broadly obtuse to rounded, 6–14 cm. long, 2.5–5.0 cm. broad, coriaceous or subcoriaceous, glabrous, glandular at the base of the midrib above; petioles 0.5–1.3 cm. long; inflorescence very congested, thyrsiform, both terminal and lateral, much shorter than the subtending leaves, bearing relatively few small, white flowers; primary peduncle minutely puberulent-papillate to glabrate, ultimate branches congested, but regularly and determinately composed, minutely puberulent-papillate; pedicels 0.16–0.2 cm. long, minutely puberulent-papillate; bracts ovate, 0.08–1.4 cm. long, scarious; calyx-lobes ovate, acute to acuminate, 0.1–0.17 cm. long, scarious, very minutely and densely puberulent-papillate without, the squamellae minute, solitary, alternate, occasionally evidently lacking; corolla minutely and densely puberulent-papillate without, the tube 0.15–0.18 cm. long, about 0.1–0.125 cm. in diameter at the base and 0.175–0.2 cm. in diameter at the orifice, villosulose within, the lobes oblong-elliptic, 0.2–0.25 cm. long, puberulent-papillate within, spreading; stamen filaments 0.05–0.08 cm. long, distinct and free, not agglutinated to the style, the anthers slightly exserted, 0.16–0.2 cm. long, glabrous; ovary ovoid, apocarpous, about 0.05 cm. long, glabrous or essentially so; stigma 0.18–0.25 cm. long, somewhat exserted beyond the connate anthers; nectaries somewhat shorter than the ovary; immature follicles long and slender, continuous and more or less agglutinated, 23–30 cm. long, glabrous or essentially so; mature seed unknown.

British Guiana: data incomplete, *Schomburgk 953* (B, BB, Camb., D, FM, K, TYPE, NY, MBG, photograph and analytical drawings).

Brazil: amazonas: in vicinibus Barra, Jan., 1851, *Spruce 999* (B, BB, D, G, M, NY); prope Panure ad Rio Uaupes, Oct., 1852–Jan., 1853, *Spruce 2080* (B); Rio Negro pr. Joaquim, Jan., 1902, *Ule 6057* (B, D); São Joaquim, Jan., 1902, *Ule 77b* (B); ad ripas inundatas super cataractam Tapuruguara, Santa Izabel, Rio Negro, Dec. 8, 1929, *Ducke 22431* (B).

The specimens cited show this species to be unusually shrubby for the genus, and Ducke has commented upon the label of his specimen "Arbor erecta vel frutex scandens?"

19. **Forsteronia paludosa** Woodson, Ann. Mo. Bot. Gard. **21**: 620. 1934.

Stems relatively slender, glabrous, conspicuously lenticellate when fully mature; leaves opposite, very shortly petiolate, narrowly oblong-lanceolate, shortly acuminate to acute, base obtuse, 5–7 cm. long, 1.3–1.6 cm. broad, firmly membranaceous or subcoriaceous, above glabrous, inconspicuously glandular at the base of the midrib, beneath inconspicuously barbellate in the axils of the midrib, otherwise glabrous; petioles 0.25–0.3 cm. long; inflorescence compound-subspiciform, terminal, about equalling or somewhat shorter than the subtending leaves, bearing several small, white flowers; primary peduncle essentially glabrous or very irregularly and sparsely pilosulose-papillate above, ultimate branches indefinitely congested, scarcely manifest; pedicels 0.01–0.02 cm. long, very minutely puberulent-papillate; bracts minutely ovate, 0.01–0.03 cm. long, scarious; calyx-lobes ovate, acute, 0.1–0.12 cm. long, scarious, very minutely puberulent-papillate without, the squamellae evidently lacking; corolla very minutely and irregularly puberulent-papillate without, the tube 0.1–0.12 cm. long, about 0.075 cm. in diameter at the base and 0.125 cm. in diameter at the orifice, minutely villosulose within, the lobes narrowly oblong, about 0.15 cm. long, densely pilosulose within; stamen filaments about 0.05 cm. long, distinct and free, not agglutinated to the style, the anthers slightly exserted, 0.15 cm. long, minutely barbellate; ovary ovoid, apocarpous, about 0.05 cm. long, minutely papillate; stigma about 0.12 cm. long; nectaries somewhat shorter than the ovary; follicles unknown.

BRAZIL: PARA: locis paludosis campos de Cupijo prope Cameta, July 22, 1916, *Ducke 21627* (B, TYPE, US, MBG, photograph and analytical drawings).

20. **Forsteronia amblybasis** Blake, Jour. Wash. Acad. Sci. **14**: 292. 1924.

Stems relatively stout, glabrous, or very minutely and indefinitely puberulent when young, conspicuously lenticellate when fully mature; leaves opposite, petiolate, ovate to oblong-elliptic, apex rather abruptly acuminate, base broadly obtuse or rounded, 6.0–14.5 cm. long, 2.3–7.4 cm. broad, membranaceous, above glabrous, glandular at the base of the midrib, beneath glabrous or minutely ciliolate-barbellate in the axils of the midrib; petioles 0.6–1.3 cm. long; inflorescence subspiciform-paniculate, both terminal and lateral, shorter than the subtending leaves, or the terminal somewhat longer, bearing many small, greenish-white flowers; primary peduncle puberulent-papillate to glabrate below, ultimate branches indefinitely congested and scarcely manifest, puberulent-papillate; pedicels 0.08–0.1 cm. long, minutely puberulent-papillate, greatly accrescent in fruit; bracts oblong- to obovate-spathulate, 0.2–0.65 cm. long, scarious or somewhat foliaceous; calyx-lobes lanceolate to ovate-lanceolate, acuminate, 0.16–0.3 cm. long, scarious or very slightly foliaceous, minutely and rather irregularly puberulent-papillate without, the squamellae apparently lacking; corolla puberulent-papillate without, the tube 0.12–0.15 cm. long, about 0.05–0.07 cm. in diameter at the base and 0.175–0.2 cm. in diameter at the orifice, villosulose within, the lobes ovate-oblong, 0.13–0.15 cm. long, densely pilosulose within, spreading; stamen filaments 0.03–0.05 cm. long, distinct and free, not agglutinated to the style, the anthers 0.13–0.16 cm. long, the tips slightly exserted, glabrous or occasionally minutely and sparsely barbellate; ovary ovoid, evidently syncarpous, or the carpels closely agglutinated, about 0.04 cm. long, minutely appressed-puberulent; stigma 0.11–0.12 cm. long; nectaries equalling or slightly surpassing the ovary; follicles very stout, continuous, 15–19 cm. long, glabrous; seeds 1.5–1.7 cm. long, the pale tawny coma 3.5–5.0 cm. long.

BOLIVIA: LA PAZ: Tipuani-Guani, Dec., 1892, *Bang 1689* (B, BB, MBG, NY, US, TYPE); "Songo," Nov., 1890, *Bang 850* (B, BB, FM, M, MBG, NY, US); Polo-Polo, bei Coroico, alt. 1100 m., Oct.–Nov., 1912, *Buchtien 3953* (NY); SANTA CRUZ: bosque, Buena Vista, Prov. Sara, alt. 400 m., Dec. 3, 1924, *Steinbach 6717* (B, D, FM, MBG, NY, US); feuchter Wald, Buena Vista, alt. 450 m., May 5, 1928, *Steinbach 8020* (B, NY).

21. **Forsteronia decipiens** Woodson, spec. nov.

Fruticosa volubilis; ramulis crassiusculis glabris maturitate conspicue lenticellatis; foliis oppositis petiolatis ovato- vel oblongo-ellipticis apice abrupte breviterque subcaudato-acuminatis basi late obtusis rotundatisve rarius obscurissime cordatis 7.5–13.0 cm. longis 2.8–8.0 cm. latis firme membranaceis supra paululo nitidulis nervo medio basi pauciglanduligero caeterumque glabris subtus opacis glabris vel inconspicuissime barbellatis; petiolis 0.6–1.1 cm. longis glabris; inflorescentiis anguste irregulariterque subspiciformi-thyrsoideis et terminalibus et lateralibus foliis paululo brevioribus flores multas parvas albidas gerentibus; pedunculo irregulariter sparseque puberulo vel glabrato; pedicellis 0.1–0.12 cm. longis post maturitatem conspicue accrescentibus minute puberulo-papillatis; bracteis 0.1–0.5 cm. longis minute puberulo-papillatis subfoliaceis maioribus oblongo- vel obovato- spathulatis minoribus pedicellos subtendentibus anguste lanceolatis; calycis laciniis ovato-ellipticis acutis 0.18–0.25 cm. longis subfoliaceis minute puberulo-papillatis squamellis non visis; corollae albidae extus minute papillatae tubo campanulato 0.1–0.12 cm. longo basi ca. 0.05 cm. diametro metiente faucibus ca. 0.15 cm. diametro metientibus intus villosulo lobis ovato-

oblongis 0.18–0.2 cm. longis intus dense villosulis patulis; filamentis staminum 0.04–0.05 cm. longis stylum haud agglutinatis antheris 0.13–0.15 cm. longis apice paulo exsertis sparse barbellatis rariusve glabratis; ovario ovoideo ut videtur syncarpo vel carpellis inter se agglutinatis ca. 0.04 cm. longo minute puberulo; nectariis ovarium aequantibus vel paululo superantibus; folliculis crassiusculis rigidis continuis divaricatis 10–13 cm. longis glabris; seminibus 1.6–1.7 cm. longis como dilute aurantiaco 4.0–4.5 cm. longo.

Stems relatively stout, glabrous, conspicuously lenticellate at maturity; leaves opposite, petiolate, ovate- to oblong-elliptic, apex abruptly and shortly subcaudate-acuminate, base broadly obtuse to rounded, rarely obscurely cordate, 7.5–13.0 cm. long, 2.8–8.0 cm. broad, firmly membranaceous, above slightly nitidulous, glandular at the base of the midrib, otherwise glabrous, beneath opaque, glabrous or very inconspicuously barbellate in the axils of the midrib; petiole 0.6–1.1 cm. long, glabrous; inflorescence narrowly and rather irregularly subspiciform-thyrsiform, both terminal and lateral, somewhat shorter than the subtending leaves, occasionally conspicuously longer when terminal, bearing many small, white flowers; peduncle irregularly and sparsely puberulent to glabrate; pedicels 0.1–0.12 cm. long, conspicuously accrescent in fruit, minutely puberulent-papillate; bracts 0.1–0.5 cm. long, more or less subfoliaceous, minutely puberulent-papillate, the larger oblong- to obovate-spathulate, the smaller which immediately subtend the pedicels narrowly lanceolate; calyx-lobes ovate-elliptic, acute, 0.18–0.25 cm. long, subfoliaceous, minutely puberulent-papillate, squamellae not seen; corolla whitish, minutely papillate without, the tube campanulate, 0.1–0.12 cm. long, about 0.05 cm. in diameter at the base and about 0.15 cm. in diameter at the orifice, villosulose within, the lobes ovate-oblong, 0.18–0.2 cm. long, densely villosulose within, spreading; stamen filaments 0.04–0.05 cm. long, distinct and free, not agglutinated to the style, the anthers 0.13–0.15 cm. long, slightly exserted at the tips, sparsely barbellate to glabrate; ovary ovoid, evidently syncarpous or the carpels agglutinated, about 0.04 cm. long, minutely puberulent; nectaries about equalling

or slightly surpassing the ovary; follicles relatively stout and rigid, sharply divaricate, 10–13 cm. long, glabrous; seeds 1.6–1.7 cm. long, the pale tawny coma 4.0–4.5 cm. long.

PERU: LORETO: forest, Balsapuerto, alt. 220 m., Febr., 1933, *Klug 2905* (NY, TYPE, MBG, photograph); same locality, June, 1933, *Klug 3104* (NY, fruiting co-TYPE, MBG, photograph); SAN MARTIN: sandy soil, Tarapoto, alt. 360–900 m., Dec. 13, 1929, *Williams 6156* (FM, MBG, US).

Although this species is very closely related to the preceding, for which it was mistaken for some time by the writer, the size and composition of the bracts render the inflorescence quickly and accurately distinguishable. Both *F. decipiens* and *F. amblybasis* have long passed for the less frequent *F. montana* Muell.-Arg. of eastern Brazil.

22. **Forsteronia montana** Muell.-Arg. in Mart. Fl. Bras. 6^1: 101. 1860; Miers, Apoc. So. Am. 245. 1878.

Forsteronia Sellowii Muell.-Arg. loc. cit. 1860; Miers, loc. cit. 1878.

Stems relatively stout, glabrous, conspicuously lenticellate when fully mature; leaves opposite, petiolate, elliptic-lanceolate to oval-obovate, apex acuminate, base broadly obtuse to rounded, firmly membranaceous, above glabrous, glandular at the base of the midrib, beneath glabrous or inconspicuously barbellate in the axils of the midrib, 3.5–10.6 cm. long, 1.1–5.4 cm. broad; petioles 0.5–1.2 cm. long; inflorescence thyrsiform, terminal, or lateral as well, about equalling or somewhat surpassing the subtending leaves, occasionally shorter, particularly when lateral, bearing many small, white flowers; primary peduncle minutely puberulent to glabrate below, ultimate branches indefinitely congested and scarcely manifest, minutely puberulent to puberulent-papillate; pedicels 0.07–0.15 cm. long, puberulent-papillate; bracts ovate-lanceolate to linear, scarious, 0.05–0.1 cm. long; calyx-lobes ovate, acute to acuminate, 0.11–0.18 cm. long, scarious, puberulent-papillate without, the squamellae evidently lacking; corolla puberulent-papillate without toward the lobes, the tube 0.11–0.13 cm. long, about 0.04–0.07 cm. in diameter at the base and 0.12–0.14 cm. in diameter at the orifice, minutely villosulose within, the lobes ovate-oblong, 0.17–0.2 cm. long, slightly spreading, minutely pilosulose within; stamen filaments 0.05–0.07 cm. long, distinct and free, not agglutinated to the style, the anthers 0.16–0.18 cm. long, the tips minutely barbellate, slightly exserted; ovary ovoid, syncarpous or agglutinated, minutely puberulent to hirtellous; stigma 0.12–0.14 cm. long; nectaries somewhat shorter than the ovary; follicles relatively stout and rigid, continuous, 22–28 cm. long, glabrous; seeds unknown, the pale tawny coma 5–6 cm. long.

BRAZIL: RIO DE JANEIRO: silvis caeduis, Sebastianopolis, date lacking, *Martius 183* (M); data incomplete, *Glaziou 7532* (B); DATA INCOMPLETE: *Sellow s.n.* (Bx, ISOTYPE, NY, MBG, photograph and analytical drawings); *Sellow 396* (B); *Riedel s.n.* (BB).

23. **Forsteronia pubescens** A. DC. in DC. Prodr. **8**: 436. 1844; Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 104. 1860; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 187. 1895.

Thyrsanthus pubescens (A. DC.) Miers, Apoc. So. Am. 101. 1878.

Thyrsanthus placidus Miers, loc. cit. 1878.

Stems relatively stout, hirtellous when young, eventually becoming glabrate and conspicuously lenticellate when fully mature; leaves opposite, petiolate, broadly oval to narrowly oblong-elliptic, apex obtuse to acuminate, base obtuse to acutish, 3.0–12.5 cm. long, 1.5–7.5 cm. broad, membranaceous, above generally puberulent to glabrate, rarely essentially glabrous, inconspicuously glandular at the base of the midrib, beneath softly and generally puberulent; petioles 0.4–0.8 cm. long, densely puberulent; inflorescence rather narrowly thyrsiform, terminal, usually equalling or somewhat surpassing the subtending leaves, less frequently shorter, bearing many small, white flowers; primary peduncle puberulent as upon the stem, ultimate branches regularly determinate, minutely puberulent; pedicels 0.1–0.2 cm. long, minutely puberulent; bracts ovate to lanceolate, 0.075–0.6 cm. long, slightly foliaceous to scarious; calyx-lobes ovate to ovate-lanceolate, acute to acuminate, 0.11–0.2 cm. long, scarious, rather inconspicuously puberulent-papillate without, the squamellae 5–6 times as numerous as the lobes, narrowly linear, indefinitely and regularly distributed; corolla essentially glabrous without, the tube 0.07–0.12 cm. long, about 0.05–0.1 cm. in diameter at the base and 0.1–0.18 cm. in diameter at the orifice, densely villosulose within, the lobes narrowly oblong, 0.3–0.5 cm. long, widely spreading, pilosulose within; stamen filaments 0.2–0.3 cm. long, connate and agglutinated to the style, the anthers 0.2–0.25 cm. long, glabrous, wholly exserted; ovary ovoid, apocarpous, minutely puberulent-papillate, about 0.05 cm. long; stigma and style 0.11–0.17 cm. long; nectaries about equalling, or slightly shorter than the ovary; follicles rather stoutish, very obscurely undulate-articulated, usually more or less falcate, 11–27 cm. long, glabrous; seeds 0.9–1.2 cm. long, the bright tawny coma 2.5–3.5 cm. long.

BRAZIL: CEARA: data incomplete, 1837–41, *Gardner 1761* (BB, TYPE, Bx, Camb., D, NY, US, MBG, photograph and analytical drawings); BAHIA: Jacobina, date lacking, *Blanchet 2652* (B, Bx, D, NY); Catingas, date lacking, *Blanchet 2452* (D); Rio Preto, date lacking, *Pohl 2189* (V); in campis ad Caitete, Nov., year lacking *Martius s.n.* (V); MINAS GERAES: data incomplete, *Claussen s.n.* (D); RIO DE JANEIRO: data incomplete, *Glaziou 12939* (B, D); MATTO GROSSO: Santa Anna da Chapada, Oct. 13, 1902, *Malme 2489* (D, S, US).

BOLIVIA: BENI: junction of rivers Beni and Madre de Dios, Aug., 1886, *Rusby 2526* (B, BB, FM, MBG, NY, US); SANTA CRUZ: bosque del Rio Cuchi, Prov. Sara, alt. 500 m., Aug. 16, 1925, *Steinbach 7782* (B, D, FM, MBG, U); Urubu, Prov. Cercado, alt. 450 m., Oct. 28, 1925, *Steinbach 7295* (B, D, FM, MBG, NY, U).

PARAGUAY: in regione collium "Cerros de Tobaty," Sept., 1900, *Hassler 6362* (B, BB); in regione lacus Ypacaray, Aug., 1913, *Hassler 12229* (B, BB, D, US); in dumetis pr. Ita, Sept., 1885–95, *Hassler 1038* (BB); in altaplanitie et declivibus "Serra de Amambay," Oct., 1907, *Rojas 9698* (B); Villarica, Oct., 1929, *Jørgensen 3444* (FM, MBG, NY, US); Concepcion de Paraguay, Sept., 1892, *Kuntze s.n.* (B, NY); Colonia Risso pr. Rio Apa, Oct. 4, 1893, *Malme 1038* (B, S); zwischen Rio Apa und Rio Aquidaban, San Luis, March, year lacking, *Fiebrig 5162* (B); bewaldetes Tal, Cordillera de Altos, Oct. 11, 1902, *Fiebrig 218a* (B); dans les bois, Villa-Rica, Oct. 21, 1874, *Balansa 1371* (BB, Bx, D); dans les haies, l'Assomption, June, 1874–Oct. 25, 1875, *Balansa 1371a* (B, BB, Bx); data incomplete, *Morong 810* (BB, FM, MBG, NY, US).

ARGENTINA: JUJUY: San Lorenzo, Oct. 31–Nov. 3, 1873, *Lorentz & Hieronymus 216* (B, NY, US); entre Ledesma y San Antonio, Oct. 30, 1873, *Lorentz & Hieronymus 358* (B, D); SALTA: en bosque alto, Abra Grande, Dept. Oran, alt. 750 m., Nov. 10, 1927, *Venturi 5518* (FM, MBG, US).

It appears probable that in Paraguay and northern Argentina hybridization may occur between this species and *F. glabrescens* Muell.-Arg., also a very frequent liana of forests and wooded areas. *Fiebrig 5162* is indicative of this supposition, the anthers being about the size of those of the latter species, and conspicuously smaller than those of the former. The number and shape of the squamellae and the obtuse tips of the calyx-lobes are also very suggestive of *F. glabrescens.* On the other hand, the texture and pubescence of the foliage, as well as the size, conform with those of *F. pubescens.* The anthers of the specimens collected by Lorentz and Hieronymus, as well as the tips of the calyx-lobes, are also similar to those of *F. glabrescens,* and the indument of the lower surface of the leaves, which allies them with *F. pubescens,* is unusually scant and somewhat more conspicuous in the axils of the midrib. A more significant difference is found in the follicles, fortunately present upon several of these specimens, which are somewhat stouter than those typical of *F. glabrescens,* but more slender than those of *F. pubescens* and with conspicuous articulations suggestive of the moniliform fruits of the former species. The suggestion presents itself that more intimate study, particularly in the field, may disclose that an intermediate species exists, probably evolved through hybridization.

24. **Forsteronia cordata** (Muell.-Arg.) Woodson, comb. nov.
Forsteronia pubescens A. DC. β. *cordata* Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 104. 1860.

Stems relatively stout, minutely tomentulose when young, eventually becoming glabrate and conspicuously lenticellate when fully mature; leaves opposite, very shortly petiolate, oblong-elliptic to oval, apex very shortly and abruptly acuminate to rounded, base rounded to obscurely cordate, 2.5–7.0 cm. long, 1.5–4.0 cm. broad, firmly membranaceous, above minutely and rather sparsely pilosulose-strigillose, inconspicuously glandular at the base of the midrib, beneath densely tomentulose; petioles 0.2–0.4 cm. long, minutely tomentulose; inflorescence broadly subcorymbose-thyrsiform, terminal, infrequently lateral as well, about equalling or somewhat shorter than the subtending leaves, bearing many small, yellowish (dark yellowish-red in desiccation) flowers; primary peduncle minutely puberulent to tomentulose, ultimate branches regularly and determinately composed, minutely puberulent; pedicels 0.2–0.4 cm. long, minutely puberulent; bracts lanceolate, 0.08–0.25 cm. long, only slightly foliaceous; calyx-lobes ovate, acute to acuminate, 0.1–0.15 cm. long, scarious, minutely and rather irregularly puberulent, the squamellae about 3–4 times as many as the lobes, regularly and indefinitely distributed; corolla conspicuously puberulent-papillate without at the tips of the lobes, otherwise essentially glabrous to very minutely and indefinitely papillate, the tube 0.07–0.1 cm. long, about 0.05 cm. in diameter at the base and 0.13–0.17 cm. in diameter at the orifice, densely villosulose within, the lobes oblong-lingulate, 0.35–0.43 cm. long, essentially glabrous or very minutely and indefinitely papillate within, widely spreading; stamen filaments 0.3–0.32 cm. long, connate and agglutinated to the style, the anthers wholly exserted, 0.25–0.27 cm. long, glabrous; ovary ovoid, about 0.05 cm. long, minutely puberulent to puberulent-papillate, apocarpous; stigma 0.1–0.125 cm. long, the style 0.25–0.27 cm. long; nectaries somewhat shorter than the ovary; follicles relatively slender, rather obscurely articulated, more or less falcate, 18–25 cm. long, glabrous; seeds 1.3–1.5 cm. long, the pale tawny coma 2.0–2.5 cm. long.

BRAZIL: RIO DE JANEIRO: in collibus inter frutices margine locis arenosis pr. R. Jan., Nov., 1829, *Lhotzky 29* (B, TYPE, MBG, photograph and analytical drawings); in der Restinga bei Copacabana, Nov., 1896, *Ule 4288* (B); same locality, May, 1897, *Ule 4434* (B); data incomplete, *Glaziou 14064* (B, FM); *Constantino 8675* (B, U, US); DATA INCOMPLETE: *Riedel s.n.* (B, BB, COTYPE); *Regel* (Camb.).

It appears reasonable to allow these plants specific rank, since they exhibit several important and conspicuous morphological differences distinguishing them from true *F. pubescens*. There is furthermore no evidence of any degree of intergradation between *F. cordata* and the former species.

25. **Forsteronia mollis** Rusby, Mem. Torrey Bot. Club **4**: 218. 1895.

Stem relatively stout, puberulent when young to glabrate or glabrous, conspicuously lenticellate when fully mature; leaves opposite, petiolate, oblong-elliptic to broadly oval, apex shortly and abruptly acuminate, base broadly obtuse or rounded, 7–12 cm. long, 4.0–7.5 cm. broad, membranaceous, glandular at the base of the midrib above; petioles 0.7–0.9 cm. long; inflorescence thyrsiform, terminal, about equalling or somewhat shorter than the subtending leaves, bearing many small, white or greenish flowers; primary peduncle puberulent to glabrate below, ultimate branches determinately composed, densely puberulent; pedicels 0.05–0.15 cm. long, minutely and densely puberulent; bracts lanceolate to ovate-lanceolate, 0.08–0.2 cm. long, only slightly foliaceous; calyx-lobes broadly ovate-suborbicular, broadly obtuse or rounded, 0.1–0.125 cm. long, scarious, minutely and densely puberulent-papillate without, the squamellae 3–5 times as many as the lobes, regularly and indefinitely distributed; corolla essentially glabrous without, the tube 0.08–0.1 cm. long, about 0.07 cm. in diameter at the base and 0.15 cm. in diameter at the orifice, villosulose within, the lobes 0.32–0.4 cm. long, minutely puberulent-papillate to essentially glabrate within, widely spreading; stamen filaments 0.15–0.22 cm. long, more or less connate and agglutinated to the style, the anthers 0.25 cm. long, wholly exserted, glabrous; ovary apocarpous, oblong-ovoid, minutely puberulent; stigma 0.12–0.15 cm. long, the style 0.15–0.175 cm. long; nectaries somewhat shorter than the ovary; follicles unknown.

Var. **typica.**

Stem puberulent when young, eventually becoming glabrate; leaves rather sparsely puberulent above, minutely tomentulose beneath; all other essential characters as in the species.

BOLIVIA: LA PAZ: "Yungas," 1890, *Bang 274* (B, BB, FM, MBG, NY, TYPE, US).

Var. **foliosa** (Rusby) Woodson, comb. nov.

Forsteronia foliosa Rusby, Descr. So. Am. Pl. 90. 1920.

Stem and leaves glabrous; all other essential characters as in the species.

BOLIVIA: LA PAZ: Polo-Polo bei Coroico, Nordyungas, alt. 1100 m., Oct.–Nov., 1912, *Buchtien 3876* (B, NY, TYPE, US, MBG, photograph and analytical drawings); same data, *Buchtien 3677* (US).

This combination is made with some trepidation, for although the presence and lack of a vegetative indument is striking in these two varieties, the general aspect of the specimens is conspicuously similar. They certainly should not be

interpreted as species upon the slight basis of available specimens.

26. **Forsteronia subcordata** K. Sch. in herb.

Fruticosa volubilis; ramulis crassiusculis glabris vel juventate minutissime papillatis maturitate conspicue lenticellatis; foliis oppositis breviter petiolatis oblongo-ellipticis apice acuminatis basi obscure cordatis 5.5–11.0 cm. longis 2.5–4.2 cm. latis tenuiter membranaceis glaberrimis nervo medio supra basi pauciglanduligero; petiolis 0.3–0.45 cm. longis; inflorescentiis thyrsiformibus terminalibus foliis conspicue brevioribus flores multas albas gerentibus; pedunculo puberulo-papillato; pedicellis 0.1–0.2 cm. longis minute puberulo-papillatis; bracteis ovatis 0.05–0.2 cm. longis scariaceis; calycis laciniis ovatis acutis acuminatisve 0.1–0.17 cm. longis scariaceis extus minute puberulo-papillatis squamellis minutissimis plus minusve numerosis regulariter positis; corollae extus glabrae vel indistinctissime papillatae tubo 0.07–0.1 cm. longo basi ca. 0.05–0.07 cm. diametro metiente faucibus ca. 0.1–0.15 cm. diametro metientibus intus minute villosulo lobis 0.3–0.4 cm. longis patulis prope apicem minute puberulo-papillatis; filamentis staminum 0.15–0.17 cm. longis stylum agglutinatis antheris 0.18–0.2 cm. longis exsertis glabris; ovario ovoideo apocarpo ca. 0.04 cm. longo minute papillato; stigmate 0.11–0.15 cm. longo; stylo ca. 0.12–0.17 cm. longo; nectariis ovarium subaequantibus; folliculis ignotis.

Stems relatively stout, glabrous or very minutely papillate when young, becoming conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-elliptic, apex acuminate, base obscurely cordate, 5.5–11.0 cm. long, 2.5–4.2 cm. broad, delicately membranaceous, glabrous, inconspicuously glandular at the base of the midrib above; petioles 0.3–0.45 cm. long; inflorescence thyrsiform, terminal, conspicuously shorter than the subtending leaves, bearing numerous small, white flowers; primary peduncle very minutely puberulent, ultimate branches determinately composed, puberulent-papillate; pedicels 0.1–0.2 cm. long, minutely puberulent-papillate; bracts ovate, 0.05–0.2 cm. long, scarious; calyx-lobes

ovate, acute to acuminate, 0.1–0.17 cm. long, scarious, minutely puberulent-papillate without, the squamellae very minute, numerous, indefinitely and regularly distributed; corolla essentially glabrous or very indefinitely papillate without, the tube 0.07–0.1 cm. long, about 0.05–0.07 cm. in diameter at the base and 0.1–0.15 cm. in diameter at the orifice, villosulose within, the lobes oblong-lingular, 0.3–0.4 cm. long, widely spreading, minutely puberulent-papillate toward the tip within; stamen filaments 0.15–0.17 cm. long, connate and agglutinated to the style, the anthers 0.18–0.2 cm. long, exserted, glabrous; ovary ovoid, apocarpous, about 0.04 cm. long, minutely papillate; stigma 0.11–0.15 cm. long, the style 0.12–0.17 cm. long; nectaries about equalling the ovary; follicles unknown.

ECUADOR: MANABI: in sylvestrib. ad El Recreo, Febr. 13, 1897, *Eggers 15618* (B, TYPE, FM, M, MBG, NY).

27. **Forsteronia leptocarpa** (Hook. & Arn.) A. DC. in DC. Prodr. **8**: 438. 1844.

Parsonsia leptocarpa Hook. & Arn. in Hook. Jour Bot. **1**: 287. 1834.

Forsteronia brasiliensis A. DC. loc. cit. 436. 1844; Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 102. 1860; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 187. 1895.

Forsteronia brasiliensis A. DC. β. *bahiensis* Muell.-Arg. loc. cit. 1860.

Thyrsanthus Brasiliensis (A. DC.) Miers, Apoc. So. Am. 103. 1878.

Laseguea leptocarpa (Hook. & Arn.) Miers, loc. cit. 254. 1878.

Thyrsanthus leptocarpus (Hook. & Arn.) Griseb. Gött. Abh. **24**: 224. 1879.

Forsteronia leptocarpa (Hook. & Arn.) A. DC. var. *glaberrima* Niederl. Bol. Mens. Prodr. Argent. **3**^{1}: 315. 1890, nom. nud.

Stems relatively stout, more or less puberulent or pilosulose when young, soon becoming glabrate and conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-elliptic to broadly oval, apex rather shortly and abruptly acuminate to obtuse, base obtuse to rounded, 2.0–10.5 cm. long, 1.3–5.5 cm. broad, firmly membranaceous, above glabrous, glandular at the base of the midrib, beneath minutely barbellate in the axils of the midrib; petioles 0.2–0.7 cm. long, minutely puberulent-papillate to glabrous; inflorescence thyrsiform, terminal, shorter than the subtending leaves, bearing numerous, congested, small, white flowers; primary peduncle more or less minutely puberulent to glabrate below, ultimate branches determinately composed, puberulent to puberulent-papillate; pedicels 0.07–0.125 cm. long, puberulent-papillate; bracts ovate, 0.07–0.2 cm. long, scarious; calyx-lobes ovate, acute to acuminate, 0.11–0.2 cm. long, scarious, puberulent-papillate without, the squamellae 3–5 times as many as the lobes, indefinitely and regularly distributed; corolla essentially glabrous without, the tube 0.1–0.17 cm. long, about 0.07–0.1 cm. in diameter at the base and 0.1–0.2 cm. in diameter at the orifice, villosulose within, the lobes 0.25–0.32 cm. long, villosulose at the base within, otherwise essentially glabrous to indefinitely and minutely papillate, widely spreading; stamen filaments 0.11–0.2 cm. long, connate and agglutinated to the style, the anthers 0.17–0.25 cm. long, exserted, glabrous; ovary apocarpous, ovoid, about 0.05 cm. long, minutely papillate; stigma 0.15–0.2 cm. long; style 0.08–0.15 cm. long; nectaries somewhat shorter than the ovary; follicles relatively slender, rather obscurely articulated, usually somewhat tortuous, 16–34 cm. long, glabrous; seeds 0.8–1.3 cm. long, the tawny coma 3.5–4.0 cm. long.

BRAZIL: PERNAMBUCO: Flussufer, Tapera, 1926, *Pickel 1222* (B); data incomplete, *Gardner 1059* (BM, Camb., FM, S, US, V); *Schornbaum s.n.* (Bx); BAHIA: Jacobina, date lacking, *Blanchet 3229* (BB, D, DC); Vittoria, date lacking, *Sellow 1542* (B); Sta. Anna, May, 1850, *Blanchet 3431* (BB, DC); MINAS GERAES: data incomplete, *Glaziou 14063* (D); RIO DE JANEIRO: Corvocado, date lacking, *Pohl s.n.* (Bx, V); Lagôa de Itapemerim, Dec. 9, 1915, *Frazão 7147* (B, S, U, US); ad urbem in silvis inter Gavea et Vista Chineza, Jan. 15, 1929, *Ducke 21810* (B, U); in der Restinga de Gavea, Sept., 1899, *Ule 4845* (B); bei Porto das Caixas, Dec., 1897, *Ule 4578* (B); Ypanema, in silva sat aperta, Oct. 10, 1904, *Dusen 5097* (D, S, US); Copacabana, Jan. 25, 1887, *Schenck 2269* (B); Morro do Quitambo, Jan. 4, 1887, *Schenck 1875* (B); data incomplete: *Guillemin 168* (DC); *Gaudichaud 534* (DC); *Lhotzky 74* (B); *Andersson s.n.* (S); *Glaziou 2507* (Bx);

Glaziou 4206 (B); SÃO PAULO: Barra do Juquia, Oct. 14, 1894, *Hoehne 11148* (B); Santos, Jan. 15, 1875, *Mosen 3434* (C, S); PARANA: Rio Cubatão, in silva fluminali, Dec. 28, 1911, *Dusen 13652* (S); Jacarehy, in silva primaeva reg. lit., March 22, 1914, *Dusen 14632* (FM, MBG, NY, S); SANTA CATHARINA: Gebüsch bei Tubarão, Dec., 1889, *Ule 1543* (B); data incomplete, *Pabst 557* (B); RIO GRANDE DO SUL: Porto Alegre, Dec., 1898, *Reineck & Czermak 467* (B); data incomplete, *Tweedie s.n.* (K, TYPE, MBG, photograph); DATA INCOMPLETE: *Riedel s.n.* (B, BB, D, FM, M, NY, U); *Vidensis s.n.* (Bx); *Glaziou 2507* (C); *Sellow 388* (B, Bx).

Also reported by Mueller from the State of Espirito Santa. *F. leptocarpa* is one of the most characteristic and uniform species of the genus *Forsteronia*, particularly in view of its wide distribution.

28. **Forsteronia australis** Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 103. 1860; Miers, Apoc. So. Am. 246. 1878.

Thyrsanthus crebriflorus Miers, loc. cit. 105. 1878.

Stems relatively stout, glabrous or minutely and indefinitely papillate when very young, becoming conspicuously lenticellate when fully mature; leaves opposite, petiolate, elliptic, apex rather abruptly acuminate, base obtuse, 3.5–10.0 cm. long, 2.0–5.5 cm. broad, firmly membranaceous, either surface glabrous, inconspicuously glandular at the base of the midrib above; petioles 0.25–0.7 cm. long, glabrous; inflorescence thyrsiform, terminal, nearly equalling or slightly surpassing the subtending leaves, bearing many small, white flowers; primary peduncle more or less densely puberulent, ultimate branches determinately composed, puberulent-papillate; pedicels 0.05–0.1 cm. long, puberulent-papillate; bracts ovate to linear, 0.07–0.2 cm. long, scarious or only slightly foliaceous; calyx-lobes ovate-deltoid, obtuse or rounded, 0.08–0.12 cm. long, scarious, densely puberulent-papillate without, the squamellae 3–5 times as many as the lobes; corolla glabrous without, the tube 0.07–0.1 cm. long, about 0.07 cm. in diameter at the base and 0.12–0.15 cm. in diameter at the orifice, minutely villosulose within at the throat, the lobes oblong-elliptic, 0.3–0.35 cm. long, rather irregularly puberulent within, widely spreading; stamen filaments 0.18–0.2 cm. long, connate and agglutinated to the style, the anthers wholly exserted, 0.22–0.25 cm. long, glabrous; ovary ovoid, apocarpous, about 0.04 cm. long, puberulent-papillate; stigma 0.15–0.17 cm. long; style 0.1–0.2 cm. long; nectaries about equalling the ovary; follicles unknown.

BRAZIL: BAHIA: S. Thomé, 1857, *Blanchet 3757* (Bx, DC); Igreja Velha, 1841, *Blanchet 3431* (B, DC, NY); MINAS GERAES: banks of the Rio Parahyba, 1842, *Gardner 5013* (B, BM, Camb., NY, US); GOYAZ: Ponte Alta, au Chapadão do Gama, date lacking, *Glaziou 21724* (B, S); DATA INCOMPLETE: *Sellow 460* (S).

Differing from the closely related *F. leptocarpa* not only in the key characters but in the larger inflorescence and absolutely glabrous leaves.

29. **Forsteronia obtusiloba** Muell.-Arg. Linnaea **30**: 413. 1860; Miers, Apoc. So. Am. 246. 1878.

Stems relatively stout, glabrous, conspicuously lenticellate when fully mature; leaves opposite, petiolate, ovate- to oblong-elliptic, apex acuminate, base broadly obtuse or rounded, 4.5–8.0 cm. long, 2–4 cm. broad, membranaceous, glabrous, inconspicuously glandular at the base of the midrib above; petioles 0.4–0.6 cm. long, glabrous; inflorescence rather laxly thyrsiform, terminal, about equalling the subtending leaves, bearing many small, white flowers; primary peduncle glabrate or very indefinitely papillate, ultimate branches determinate, puberulent-papillate; pedicels 0.1–0.15 cm. long, very minutely puberulent-papillate; bracts ovate, 0.07–0.12 cm. long, scarious; calyx-lobes ovate-deltoid, broadly obtuse or rounded, 0.08–0.1 cm. long, scarious, minutely papillate or puberulent-papillate without, the squamellae 3–5 times as many as the lobes; corolla essentially glabrous without, the tube 0.07–0.09 cm. long, about 0.05 cm. in diameter at the base and 0.15 cm. in diameter at the orifice, villosulose within, the lobes oblong-elliptic, 0.3–0.35 cm. long, densely puberulent-papillate within, widely spreading; stamen filaments 0.18–0.22 cm. long, agglutinated to the style, the anthers 0.2 cm. long, glabrous; ovary ovoid, apocarpous, about 0.05 cm. long, densely papillate; stigma 0.18 cm. long; style 0.1 cm. long; nectaries about equalling the ovary; follicles unknown.

VENEZUELA: DISTRITO FEDERAL [?]: "prov. de Caracas, Curucuti," alt. 2000 pp., Febr., 1846, *Funck & Schlim 310* (BB, DC, TYPE, MBG, photograph and analytical drawings).

30. Forsteronia glabrescens Muell.-Arg. in Mart. Fl. Bras. **6^1**: 102. 1860.

Thyrsanthus glabrescens (Muell.-Arg.) Miers, Apoc. So. Am. 102. 1878.

Stems relatively stout, glabrous, conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, elliptic, apex shortly acuminate to subobtuse, base obtuse to acute, frequently more or less cuneate, 3.0–6.5 cm. long, 1.2–2.7 cm. broad, firmly membranaceous to subcoriaceous, glabrous; petioles 0.2–0.6 cm. long, glabrous; inflorescence amply thyrsiform, terminal, about equalling or somewhat surpassing the subtending leaves, bearing many small, white flowers; primary peduncle minutely puberulent, ultimate branches puberulent-papillate, determinately composed; pedicels 0.05–0.1 cm. long, puberulent-papillate; bracts ovate, 0.05–0.25 cm. long, scarious or only slightly foliaceous; calyx-lobes ovate, acute to obtuse, 0.1–0.12 cm. long, scarious, very minutely papillate to essentially glabrous without, the squamellae 3–5 times as many as the lobes, indefinitely and regularly distributed; corolla glabrous without, the tube 0.08–0.1 cm. long, about 0.05–0.07 cm. in diameter at the base and 0.1–0.15 cm. in diameter at the orifice, minutely villosulose within, the lobes 0.25–0.34 cm. long, pilosulose within, widely spreading; stamen filaments 0.13–0.2 cm. long, agglutinated to the style, the anthers 0.15–0.2 cm. long, glabrous, wholly exserted; stigma 0.11–0.14 cm. long; style 0.08–0.11 cm. long; ovary ovoid, minutely papillate, apocarpous, about 0.04 cm. long; nectaries somewhat shorter than the ovary; follicles relatively slender, rather distantly moniliform, subparallel or more or less tortuose, 15–33 cm. long, glabrous; seeds 0.65–0.75 cm. long, the pale tawny coma 2.7–3.2 cm. long.

BRAZIL: SÃO PAULO: Batataes, March, 1849, *Regnell III 882* (S); PARANA: Fortaleza, in silvula, Febr. 26, 1910, *Dusen, 9487* (D, FM, MBG, S, US); RIO GRANDE DO SUL: Uferwald des Rio Camaquam, 1887, *Ihering 8* (B); in margine silvula, loco sat sicco, Cachoeira, Febr. 20, 1893, *Malme 602* (S); Ilha dos Marinheiros pr. Rio Grande, in arena plus minusve mobilis, Nov. 24, 1892, *Malme 364* (S); in margine silvularum, loco sat sicco, Porto Alegre, Nov. 3, 1892, *Malme 248* (S); in Waldringen an der Avenida Ernesto, Porto Alegre, Jan., 1899, *Reineck 467* (D); data incomplete, *Ihering 300* (B); DATA INCOMPLETE: *Sello 1473* (B).

BOLIVIA: TARIJA: Bermejo, alt. 1400 m., Nov. 30, 1903, *Fiebrig 2310* (B, D, M, S, U, US).

PARAGUAY: common in woods and hedges, Villarica, Nov. 9, 1928, *Jørgensen 3445* (FM, MBG, NY, US); Cordillere de Peribebuy au dessus de Mbatobi, Nov. 1, 1883, *Balansa 4606* (BB, D); dans les forêts, Paraguari, Oct. 1876–July, 1877, *Balansa 1369* (B, BB, Bx, D, S); bewaldetes Tal, Cordillera de Altos, Oct. 11, 1902, *Fiebrig 218* (B, D, FM, M); zwischen Rio Apa und Rio Aquidaban, San Luis, Oct. 31, 1908, *Fiebrig 4157* (B, D, M); in silva pr. Cerro Leon, June, 1895, *Hassler 417* (BB); in dumetis pr. Campo Duarte, Oct., 1885, *Hassler 1350* (BB); San Bernardino, June, year lacking, *Hassler 3032* (BB); ad marg, silvae, Cordillera de Altos, Oct., year lacking, *Hassler 3345* (B, BB); in regione fluminis Corrientes, Sept., year lacking, *Hassler 4528* (B, BB); in altaplanitie et decliviis ''Sierra de Maracayu,'' Oct., year lacking, *Hassler 5136* (BB); in altaplanitie ''Sierra de Amambay,'' Sept., 1912, *Hassler 11962* (B, D, FM); in regione lacus Ypacaray, Oct., 1913, *Hassler 12326* (B, D, MBG, US).

ARGENTINA: FORMOSA: Guayculee, Febr., 1918, *Jørgensen 3573* (BA, MBG); exact locality lacking, Nov., 1891, *Niederlein 67b* (B); CHACO: Mocovi, Nov. 13, 1903, *Venturi 46* (BA, D, MBG, US); Las Palmas, Oct., 1917, *Jørgensen 1956* (BA, MBG, US); Rio de Oro, Dec. 7, 1892, *Niederlein 72* (B); MISIONES: Santa Ana, Sept. 20, 1912, *Rodriguez 3588* (BA, MBG); San Ignacio, Sept. 7, 1919, *Munies 3586* (BA, MBG); Posadas, Bonpland, in silva ad occid. versus, Jan. 23, 1908, *Ekman 1586* (NY, S); same locality, in fruticeto ad praed. ''La Granja,'' Nov. 12, 1907, *Ekman 1585* (S); CORRIENTES: Wald bei Riachuelo, Jan. 19, 1883, *Niederlein 83* (B).

URUGUAY: ARTIGAS: Montes del Cuareim, May, 1901, *Arechavaleta 18* (B).

31. **Forsteronia tarapotensis** K. Sch. in Engl. Bot. Jahrb. **40**: 411. 1908, nom. nud.

Frutices volubiles; ramulis crassiusculis glabris maturitate conspicue lenticellatis; foliis oppositis breviter petiolatis lanceolatis oblongo-ellipticisve apice acuminatis basi obtusis 4.5–10.6 cm. longis 1.3–3.0 cm. latis membranaceis glaberrimis supra nervo medio pauciglanduligero; petiolis 0.3–0.5 cm. longis; inflorescentiis dense subspicato-thyrsiformibus terminalibus foliis conspicue brevioribus; pedunculo omnino puberulo; pedicellis 0.04–0.05 cm. longis minute puberulis; bracteis ovatis vel ovato-lanceolatis 0.1–0.2 cm. longis scariaceis vel paululo foliaceis; calycis laciniis ovatis acutis acuminatisve 0.18–0.2 cm. longis scariaceis extus dense minuteque puberulis squamellis minutis multis plus minusve regulariter positis; corollae tubo ca. 0.15 cm. longo basi ca. 0.08–0.1 cm. diametro metiente faucibus ca. 0.175–0.2 cm. diametro metientibus extus minute puberulo-papillatis intus villosulis lobis oblongo-ovatis 0.35–

0.55 cm. longis patulis extus omnino denseque puberulis intus villosulis; filamentis staminum 0.25–0.3 cm. longis stylum agglutinatis antheris 0.2–0.25 cm. longis glabris omnino exsertis; ovario ovoideo apocarpo ca. 0.07 cm. longo puberulo-papillato; stigmate ca. 0.18–0.2 cm. longo; stylo ca. 0.075 cm. longo; nectariis ovario conspicue brevioribus; folliculis ignotis.

Stems relatively stout, glabrous, conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, lanceolate to oblong-elliptic, apex acuminate, base obtuse, 4.5–10.6 cm. long, 1.3–3.0 cm. broad, firmly membranaceous, glabrous, above inconspicuously glandular at the base of the midrib; petioles 0.3–0.5 cm. long; inflorescence densely thyrsiform-subspiciform, terminal, conspicuously shorter than the subtending leaves, bearing numerous small, white flowers; peduncle rather densely puberulent, ultimate branches rather indefinitely congested, minutely puberulent; pedicels 0.04–0.05 cm. long, minutely puberulent; calyx-lobes ovate to ovate-lanceolate, acute to acuminate, 0.18–0.2 cm. long, scarious or only slightly foliaceous, the squamellae minute, numerous, regularly and indefinitely distributed; corolla-tube about 0.15 cm. long, about 0.08–0.1 cm. in diameter at the base and 0.175–0.2 cm. in diameter at the orifice, without minutely puberulent-papillate, villosulose within, the lobes oblong-ovate, 0.35–0.55 cm. long, densely puberulent without, villosulose within, widely spreading; stamen filaments 0.25–0.3 cm. long, agglutinated to the style, the anthers 0.2–0.25 cm. long, glabrous, wholly exserted; ovary ovoid, apocarpous, about 0.07 cm. long, puberulent-papillate; stigma about 0.18–0.2 cm. long; style about 0.075 cm. long; nectaries much shorter than the ovary; follicles unknown.

PERU: LORETO: im Buschwald, Tarapoto, Nov., 1902, *Ule 6561* (B, TYPE, D, MBG, photograph and analytical drawings); prope Tarapoto, 1855–6, *Spruce 4908* (Bx, Camb.); forest, Yurimaguas, Oct. 22, 1929, *Williams 3891* (FM); Tarapoto, Dec. 5, 1929, *Williams 5611* (FM, MBG).

Well distinguished from its immediate relatives by the small foliage and puberulent corollas. *Spruce 4908* was referred to *F. Pavonii* A. DC. (= *Apocynum cannabinum* L. var. *glaberrimum* A. DC.) by Miers (Apoc. So. Am. 243. 1878).

32. Forsteronia myriantha Donn. Sm. Bot. Gaz. **27**: 435. 1899.

Stems relatively stout, minutely puberulent to papillate when very young, soon becoming glabrate and conspicuously lenticellate; leaves opposite, shortly petiolate, elliptic to oval, apex acute to acuminate, occasionally obtuse, base obtuse to broadly acute, 4.5–10.0 cm. long, 2.0–4.5 cm. broad, membranaceous, inconspicuously glandular at the base of the midrib above, beneath glabrous, or infrequently rather sparsely and irregularly pilosulose to glabrate; petioles 0.2–0.45 cm. long; inflorescence rather densely and broadly thyrsiform, terminal, conspicuously surpassed by the subtending leaves, bearing many small, white flowers; primary peduncle minutely puberulent-papillate, rarely densely and conspicuously puberulent, ultimate branches determinate, puberulent-papillate to densely puberulent; pedicels 0.1–0.21 cm. long, puberulent to puberulent-papillate; bracts ovate-trigonal, acuminate, 0.1–0.3 cm. long, scarious; calyx-lobes ovate, broadly acute to obtuse, 0.1–0.12 cm. long, scarious, puberulent-papillate or rarely tomentulose without, the squamellae minute, many, indefinitely distributed and apparently adnate to the base of the lobes; corolla glabrous to very minutely papillate without, the tube 0.07–0.09 cm. long, about 0.05–0.07 cm. in diameter at the base and 0.15–0.17 cm. in diameter at the orifice, villosulose within, the lobes 0.25–0.3 cm. long, minutely pilosulose within, widely spreading; stamen filaments 0.12–0.18 cm. long, agglutinated to the style, the anthers 0.18–0.23 cm. long, widely exserted, glabrous; ovary ovoid, apocarpous, minutely puberulent-papillate, about 0.03 cm. long; stigma 0.08–0.13 cm. long; style 0.08–0.12 cm. long; nectaries somewhat shorter than the ovary; follicles unknown.

GUATEMALA: SANTA ROSA: Naranjo, alt. 1100 m., May, 1893, *Heyde & Lux 4533* (B, BB, FM, MBG, NY, US); ZACATEPEQUEZ: Embaulada, alt. 1800 m., Dec., 1889, *Heyde & Lux 4534* (B, BB, M, MBG, US); PETEN: La Libertad, April 6, 1933, *Lundell 2540* (FM).

COSTA RICA: ALAJUELA: collines de Santiago, près S. Ramon, alt. 1100–1200 m., April 25, 1901, *Brenes 14272* (B, FM, US); CARTAGO: bords du rio de Las Vueltas, Tucurrique, alt. 635 m., May, 1899, *Tonduz 13355* (B, D, FM, M, US); SAN JOSE [?]: Rio Hondo, May 8, 1903, *Pittier 16622* (B, US).

PANAMA: CANAL ZONE: Gatun Sta., Panama R. R., Febr. 11, 1860, *Hayes s.n.* (G, MBG, NY).

Heyde & Lux 4533 is conspicuous because of the densely puberulent inflorescence. The inflorescence of the species as a whole is densely puberulent-papillate, however, and since but a single specimen exists of the more conspicuously pubescent type, no taxonomic segregation has been attempted, other characters being quite in harmony with those other recorded specimens from Guatemala, Costa Rica, and Panama.

33. Forsteronia galbina Woodson, spec. nov.

Fruticosa volubilis; ramulis crassiusculis glabris vel juventate minutissime papillatis maturitate conspicue lenticellatis; foliis oppositis petiolatis ovalibus vel obovato-ellipticis apice obtusis vel brevissime acuminatis basi obtusis 4.5–8.0 cm. longis 2.7–4.0 cm. latis membranaceis supra glabris nervo medio basi inconspicue glanduligero subtus in axillis nervi medii minute barbellatis caeterumque glabris; petiolis 0.3–0.8 cm. longis; inflorescentiis latissime thyrsiformibus paene subcorymbosis terminalibus folia subaequantibus flores multas minutas galbinas gerentibus; pedunculo ramulisque puberulo-papillatis; pedicellis 0.12–0.15 cm. longis minute puberulo-papillatis; bracteis lanceolatis acuminatis 0.05–0.1 cm. longis scariaceis; calycis laciniis ovatis acutis acuminatisve 0.1–0.125 cm. longis extus dense puberulo-papillatis squamellis minutis numerosis basi plus minusve connatis; corollae tubo 0.07–0.1 cm. longo basi ca. 0.06–0.07 cm. diametro metiente faucibus ca. 0.15–0.175 cm. diametro metientibus extus minutissime papillato intus laxe villosulo lobis 0.25 cm. longis patulis extus minute puberulis puberulo-papillatisve intus glabriusculis; filamentis staminum ca. 0.09 cm. longis stylum agglutinatis antheris 0.19–0.21 cm. longis glabris omnino exsertis; ovario ovoideo apocarpo ca. 0.05 cm. longo puberulo-papillato; stigmate ca. 0.11 cm. longo; stylo ca. 0.09 cm. longo; nectariis ovarium paene aequantibus; folliculis desiderantibus.

Stems relatively stout, glabrous or minutely papillate when very young, soon becoming glabrate and conspicuously lenticellate when fully mature; leaves opposite, petiolate, oval to

obovate-elliptic, apex obtuse to very shortly acuminate, base obtuse, 4.5–8.0 cm. long, 2.7–4.0 cm. broad, membranaceous, above glabrous, inconspicuously glandular at the base of the midrib, beneath minutely barbellate in the axils of the midrib, otherwise glabrous; petioles 0.3–0.8 cm. long; inflorescence very broadly thyrsiform, almost subcorymbose, terminal, somewhat shorter than or about equalling the subtending leaves, bearing many small, yellowish-green flowers; peduncle puberulent-papillate, ultimate branches determinate, minutely puberulent-papillate; pedicels 0.12–0.15 cm. long, minutely puberulent-papillate; bracts lanceolate, acuminate, 0.05–0.1 cm. long, scarious; calyx-lobes ovate, acute to acuminate, 0.1–0.125 cm. long, scarious, densely puberulent-papillate without, the squamellae minute, numerous, in groups more or less connate at the base; corolla-tube 0.07–0.1 cm. long, about 0.06–0.07 cm. in diameter at the base and 0.15–0.175 cm. in diameter at the orifice, very minutely papillate without, laxly villosulose within, the lobes about 0.25 cm. long, widely spreading, minutely puberulent-papillate or puberulent without, essentially glabrous within; stamen filaments about 0.09 cm. long, agglutinated to the style, the anthers 0.19–0.21 cm. long, wholly exserted, glabrous; ovary apocarpous, ovoid, about 0.05 cm. long, puberulent-papillate; stigma about 0.11 cm. long; style about 0.09 cm. long; nectaries almost equalling the ovary; follicles unknown.

PERU: LORETO: Flutfreier Hochwald, Mündung d. Santiago, alt. 160 m., Sept. 24, 1924, *Tessmann 3967* (B, TYPE, D, MBG, photograph and analytical drawings).

This species is perhaps too closely related to the foregoing, of which it might be considered a variety. The geographical isolation, together with the rather slight morphological distinctions, however, has prompted its interpretation as a specific entity. Fruit of both *F. myriantha* and *F. galbina* is awaited with interest.

34. Forsteronia thyrsoidea (Vell.) Muell.-Arg. in Mart. Fl. Bras. 6^1: 105. 1860; Miers, Apoc. So. Am. 247. 1878.

Stems relatively stout, more or less densely pilose or puberulent when young, eventually becoming glabrate and conspicuously lenticellate when fully mature; leaves opposite, petiolate, oblong-elliptic to broadly oval, apex acuminate to acute or obtuse, base broadly obtuse to rounded, 4–12 cm. long, 1.5–5.0 cm. broad, firmly membranaceous, above minutely pilose to glabrous, inconspicuously glandular at the base of the midrib, beneath more or less densely puberulent generally, or barbellate in the axils of the midrib and otherwise glabrous; petioles 0.3–0.9 cm. long, indument as upon the stem; inflorescence rather narrowly and densely thyrsiform, terminal, somewhat shorter than the subtending leaves, bearing many small, greenish-yellow flowers; primary peduncle puberulent, ultimate branches determinate, puberulent to puberulent-papillate; pedicels 0.05–0.1 cm. long, puberulent to puberulent-papillate; bracts lanceolate to linear-lanceolate, 0.4–1.0 cm. long, conspicuously foliaceous; calyx-lobes lanceolate to ovate-lanceolate, long-acuminate, 0.1–0.3 cm. long, minutely puberulent-papillate without, conspicuously foliaceous, the alternate squamellae solitary or infrequently paired; corolla-tube 0.13–0.2 cm. long, about 0.07–0.125 cm. in diameter at the base and 0.15–0.2 cm. in diameter at the orifice, essentially glabrous without, villosulose within, the lobes oblong to oblong-ovate, 0.25–0.38 cm. long, widely spreading, papillate without, minutely villosulose at the base within; stamen filaments 0.18–0.3 cm. long, agglutinated to the style, the anthers 0.2–0.28 cm. long, glabrous, wholly exserted; ovary ovoid, apocarpous, about 0.05 cm. long, papillate; stigma 0.11–0.15 cm. long; style 0.1–0.25 cm. long; nectaries somewhat shorter than the ovary.

Var. **typica.**

Echites thyrsoidea Vell. Fl. Flum. 111. 1830; Icones **3**: *pl. 37.* 1827, except the fruit.

Forsteronia multinervia A. DC. in DC. Prodr. **8**: 437. 1844; Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 104. 1860.

Forsteronia multinervia A. DC. δ *ovalifolia* Muell.-Arg. loc. cit. 105. 1860.

Thyrsanthus multinervius (A. DC.) Miers, Apoc. So. Am. 103. 1878.

Stems conspicuously pubescent when young, eventually becoming glabrate; leaves rather inconspicuously and irregularly pubescent to glabrate above, beneath more or less puberulent generally; follicles relatively stout, continuous or essentially so, sharply divaricate, 13–25 cm. long, glabrous or essentially so; seeds 1.0–1.6 cm. long, the tawny coma 3.2–4.7 cm. long; other characters as in the species.

BRAZIL: MINAS GERAES: Lagôa Santa, date lacking, *Warming s.n.* (C, NY); RIO DE JANEIRO: in fruticetis, collibus, pr. civ. R. Jan., Febr., 1829, *Lhotzky 55* (B); ad urbem, in silvis inter Gavea et Vista Chineza, Jan. 15, 1929, *Ducke 21810* (US); locality lacking, 1865, *Allemão s.n.* (DC); SÃO PAULO: ad ripas Rio Pardo, Barretos, Nov., 1917, *Frazão 8674* (B, U); Ilha da Quaeimada Grande, Nov. 6, 1920, *Gehrt 4555* (B); data incomplete, Dec. 5, 1875, *Mosen 4271* (S); RIO GRANDE DO SUL: Potreiro dos Duridos, Municipio Rio Pardo, Nov., 1928, *Jürgens 29* (B); DATA INCOMPLETE: *Riedel s.n.* (B, BB, G, NY, U); *Glaziou 17138* (B, Bx, C); *Luschnath s.n.* (C); *Sellow 635* (B).

PARAGUAY: dans les bois, Paraguari, Oct., 1874, *Balansa 1370b* (D, DC); Grande Picada de Caaguazu, April, 1876, *Balansa 1370a* (BB); in regione fluminis Alto Parana, 1909–10, *Fiebrig 6267* (B); in silva pr. Cordillera de Altos, Dec., 1885, *Hassler 1577* (BB); same locality, Nov., year lacking, *Hassler 3494* (B).

ARGENTINA: MISIONES: Santa Ana, Sept. 19, 1912, *Rodriguez 605* (BA, MBG); Picarda a San Pedro, Oct. 27, 1886, *Niederlein 2219* (B); data incomplete, Oct. 8, 1896, *Bettfreund 943* (B).

A very distinctive species because of the narrow inflorescence with conspicuous, foliaceous bracts. There appears to be little room for doubt that our specimens correspond to Vellozo's illustration with the exception of the three pairs of subparallel, moniliform follicles. Since the combination of such an inflorescence and foliage with such follicles, which closely resemble those of *F. pubescens* or *F. glabrescens*, is unknown in the flora as represented in our herbaria, the assumption appears to be justified that the illustration is an accidental composite.

Var. **glabriuscula** (A. DC.) Woodson, comb. nov.

Forsteronia mutinervia A. DC. β *glabriuscula* A. DC. in DC. Prodr. **8**: 437. 1844; Muell.-Arg. in Mart. Fl. Bras. **6^1**: 105. 1860.

Forsteronia obscura Rusby, Mem. Torrey Bot. Club **4**: 219. 1895.

Stems minutely and inconspicuously puberulent when very young, soon becoming glabrate; leaves glabrous above, beneath rather inconspicuously barbellate in the axils of the midrib; follicles unknown; other characters as in the species.

BRAZIL: RIO DE JANEIRO: inter Cabo Frio et Campos, 1829, *Vidensis s.n.* (Bx); data incomplete, *Glaziou 4092* (B); SANTA CATHARINA: an der Garciastrasse bei Blumenau, Nov., 1888, *Ule 1161* (B).

BOLIVIA: "Songo," Nov., 1890, *Bang 855* (B, BB, D, FM, M, MBG, NY, US).

It appears possible that this entity may represent an artificial collection of spontaneous variations assuming a like aspect independently. Although such a view may be supported by the rather incongruent distribution of the few specimens cited in the foregoing paragraphs, the plants themselves are remarkably similar, and conspicuous intergradation to the typical variety is lacking as yet.

35. **Forsteronia Velloziana** (A. DC.) Woodson, Ann. Mo. Bot. Gard. **21**: 622. 1934.

Echites bracteata Vell. Fl. Flum. 112. 1830; Icones **3**: *pl. 41.* 1827, not HBK.

Echites Velloziana A. DC. in DC. Prodr. **8**: 474. 1844.

Forsteronia multinervia A. DC. γ *microphylla* Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 105. 1860.

Forsteronia ? bracteata (Vell.) Muell.-Arg. loc. cit. 106. 1860.

Thyrsanthus bracteatus (Vell.) Miers, Apoc. So. Am. 102. 1878.

Forsteronia microphylla (Muell.-Arg.) Handel-Mzt. Denkschr. K.K. Akad. Wiss. Wien **79**: 388. 1931 (reprint, 12. 1910).

Stems relatively stout, conspicuously ferruginous-hirsutulose when young, eventually becoming glabrate and conspicuously lenticellate when fully mature; leaves opposite, very shortly petiolate, nearly subsessile, oblong-elliptic to broadly oval, apex shortly and abruptly acuminate to obtuse, base broadly obtuse or rounded, occasionally almost subcordate, 2.5–7.0 cm. long, 1–4 cm. broad, firmly membranaceous, above rather sparsely and minutely hirtellous to glabrate, inconspicuously glandular at the base of the midrib, beneath finely and generally puberulent; petioles 0.15–0.35 cm. long, indument as upon the stem; inflorescence densely subcorymbose-thyrsiform, terminal, conspicuously shorter than the subtending leaves, bearing few to numerous small, white or greenish flowers; peduncle hirtellous throughout; pedicels 0.08–0.1 cm. long, minutely hirtellous; bracts lanceolate to linear-lanceolate, somewhat foliaceous, 0.1–0.8 cm. long; calyx-lobes lanceolate, acuminate, 0.25–0.4 cm. long, minutely puberulent without, the alternate squamellae solitary or infrequently paired; corolla-tube 0.1–0.12 cm. long, minutely papillate or essentially glabrous without, puberulent within, about 0.1–0.13 cm. in diameter at the base and 0.15–0.23 cm. in diameter at the orifice, the lobes oblong-ovate, 0.3–0.4 cm. long, only slightly spreading, puberulent-papillate without, papillate within; stamen filaments 0.1–0.15 cm. long, agglutinated to the style, the anthers 0.23–0.29 cm. long, glabrous, wholly exserted; ovary apocarpous, ovoid, about 0.45 cm. long, minutely puberulent-papillate; stigma 0.12–0.17 cm. long; style about 0.1 cm. long; nectaries somewhat shorter than the ovary; follicles relatively short and stout, 5–10 cm. long, glabrous, or sparsely and minutely hirtellous when immature, divaricate; seeds 0.6–0.8 cm. long, the tawny coma 2.3–2.6 cm. long.

BRAZIL: RIO DE JANEIRO: data incomplete, *Glaziou 7757* (B); MINAS GERAES: Caete, Nov., 1915, *Hoehne 6623* (B); S. de Antonio Pereira, Oct. 27, 1892, *Schwacke 8754* (B); in virgultis, Ouro Preto, Oct. 20, 1895, *Schwacke 11854* (B); data incomplete: *Widgren 52* (Bx, S); *Widgren 51* (B, S); *Regnell III 877* (B, FM, S, US); SÃO PAULO: Botucatu, Nov., 1896, *Novaes 384* (US); Rio Pequeno, Butantan, Oct. 28, 1918, *Hoehne 2549* (B); Morro-Pellado, Ityrapina, Jan., 1901, *Edwall 11147* (B); PARANA: ad marg. silvulae, Jaguariahyva, Nov. 5, 1910, *Dusen 10366* (D, FM, MBG, NY, US); DATA INCOMPLETE: *Sellow 36* (B).

There can be no question that this entity is entitled to full specific rank. Its characteristic inflorescence, virtually erect corolla-lobes, vegetative indument, and short follicles are quite uniform throughout the specimens examined.

36. Forsteronia chiriquensis Woodson, spec. nov.

Fruticosa volubilis; ramulis sat crassiusculis juventate laxe ferrugineo-hirtellis maturitate glabratis conspicue lenticel-

latis; foliis oblongo- vel obovato-ellipticis apice abrupte breviterque subcaudato-acuminatis basi late obtusis 7–10 cm. longis 3.2–3.8 cm. latis membranaceis supra glabris glabratisve nervo medio basi pauciglanduligero subtus in axillis nervi medii inconspicue barbellatis; petiolis 0.3–0.5 cm. longis ut in ramulis vestitis; inflorescentiis subspiciformi-thyrsiformibus terminalibus folia subaequantibus flores multas viridi-albidas (?) gerentibus; pedunculo hirtello ramulis vix manifestis glomeratis; pedicellis vix manifestis subnullis; bracteis lanceolatis vel ovato-lanceolatis 0.1–0.45 cm. longis subfoliaceis; calycis laciniis ovato-lanceolatis acuminatis 0.25–0.3 cm. longis minute irregulariterque puberulo-papillatis squamellis alternatis 1–2; corollae tubo 0.1 cm. longo basi ca. 0.05 cm. diametro metiente faucibus ca. 0.175 cm. diametro metientibus extus glabriusculo intus villosulo lobis oblongis 0.28–0.3 cm. longis patulis extus minute papillatis intus minute puberulo-papillatis; filamentis staminum 0.17–0.2 cm. longis stylum agglutinatis antheris ca. 0.25 cm. longis omnino exsertis glabris; ovario apocarpo ovoideo ca. 0.06 cm. longo minute hirtello; stigmate 0.15 cm. longo; stylo 0.18 cm. longo; nectariis ovario brevioribus; folliculis ignotis.

Stems relatively stout, rather laxly ferruginous-hirtellous when young, eventually becoming glabrate and conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong- to obovate-elliptic, apex shortly and abruptly subcaudate-acuminate, base broadly obtuse, 7–10 cm. long, 3.2–3.8 cm. broad, membranaceous, above glabrous or glabrate, glandular at the base of the midrib, beneath inconspicuously barbellate in the axils of the midrib; petioles 0.3–0.5 cm. long, indument as upon the stem; inflorescence subspiciform-thyrsiform, terminal, about equalling the subtending leaves, bearing numerous small, greenish-white (?), subsessile flowers; peduncle hirtellous, the ultimate branches extremely reduced and indefinitely manifest; pedicels scarcely manifest; bracts lanceolate to ovate-lanceolate, 0.1–0.45 cm. long, subfoliaceous; calyx-lobes ovate-lanceolate, acuminate, 0.25–0.3 cm. long, minutely and irregularly puberulent-papillate without, the alter-

nate squamellae solitary or paired; corolla-tube about 0.1 cm. long, about 0.05 cm. in diameter at the base and 0.175 cm. in diameter at the orifice, essentially glabrous without, villosulose within, the lobes oblong, 0.28–0.3 cm. long, widely spreading, minutely papillate without, minutely puberulent-papillate within; stamen filaments 0.17–0.2 cm. long, agglutinated to the style, the anthers about 0.25 cm. long, wholly exserted, glabrous; ovary apocarpous, ovoid, about 0.06 cm. long, minutely hirtellous; stigma 0.15 cm. long; style 0.18 cm. long; nectaries somewhat shorter than the ovary; follicles unknown.

PANAMA: CHIRIQUI: data incomplete, May, 1858, *Wagner s.n.* (M, TYPE, MBG, photograph and analytical drawings).

This species suggests *F. thyrsoidea* of southeastern South America, but differs notably in the subspiciform construction of the inflorescence. Additional material is greatly to be desired.

37. **Forsteronia Pycnothyrsus** K. Sch. in herb.

Fruticosa volubilis; ramulis sat crassis juventate dense laxeque ferrugineo-hirtellis maturitate glabratis conspicue lenticellatis; foliis oppositis breviter petiolatis oblongo-ovalibus apice acutis obtusisve basi late obtusis rotundatisve 4.0–4.5 cm. longis 1.8–2.2 cm. latis membranaceis supra sparse minuteque hirtellis nervo medio basi inconspicue glanduligero subtus dense puberulis; petiolis 0.35–0.4 cm. longis ut in ramulo vestitis; inflorescentiis subspiciformi-thyrsiformibus terminalibus folia conspicue superantibus flores multas parvas viridi-albidas (?) gerentibus; pedunculo minute ferrugineo-hirtello ramulis glomeratis vix manifestis; pedicellis 0.03–0.05 cm. longis minute puberulis; bracteis ovatis 0.1–0.2 cm. longis scariaceis; calycis laciniis late ovatis obtusis rotundatisve 0.13–0.15 cm. longis scariaceis extus dense minuteque puberulis squamellis alternatis solitariis; corollae tubo 0.1 cm. longo basi ca. 0.07 cm. diametro metiente faucibus ca. 0.15 cm. diametro metientibus extus glabriusculo vel indistincte papillato intus villosulo lobis oblongis 0.25 cm. longis patulis extus puberulo-papillatis intus dense pilosulis; filamentis staminum 0.18 cm.

longis antheris ca. 0.2 cm. longis omnino exsertis glabris; ovario apocarpo ovoideo ca. 0.035 cm. longo minute hirtello; stigmate 0.14–0.15 cm. longo; stylo 0.1 cm. longo; nectariis ovario brevioribus; folliculis ignotis.

Stems relatively stout, densely and laxly ferruginous-hirtellous when young, eventually becoming glabrate and conspicuously lenticellate when fully mature; leaves opposite, petiolate, oblong-oval, apex acute to obtuse, base broadly obtuse or rounded, 4.0–4.5 cm. long, 1.8–2.2 cm. broad, membranaceous, above sparsely and minutely hirtellous, inconspicuously glandular at the base of the midrib, beneath densely puberulent; petioles 0.35–0.4 cm. long, indument as upon the stem; inflorescence subspiciform-thyrsiform, terminal, conspicuously surpassing the subtending leaves, bearing many small, greenish-white (?) flowers; primary peduncle minutely ferruginous-hirtellous, the ultimate branches glomerate, scarcely manifest; pedicels 0.03–0.05 cm. long, minutely puberulent; bracts ovate, 0.1–0.2 cm. long, scarious; calyx-lobes broadly ovate, obtuse to rounded, 0.13–0.15 cm. long, densely and minutely puberulent without, the alternate squamellae solitary; corolla-tube 0.1 cm. long, about 0.07 cm. in diameter at the base and 0.15 cm. in diameter at the orifice, minutely and indistinctly papillate or essentially glabrous without, villosulose within, the lobes oblong, 0.25 cm. long, widely spreading, puberulent-papillate without, densely pilosulose within; stamen filaments 0.18 cm. long, the anthers about 0.2 cm. long, wholly exserted, glabrous; ovary apocarpous, ovoid, about 0.035 cm. long, minutely hirtellous; stigma 0.14–0.15 cm. long; style 0.1 cm. long; nectaries somewhat shorter than the ovary; follicles unknown.

COLOMBIA or ECUADOR: data incomplete, *Lehmann 7885* (B, TYPE, FM, MBG, photograph and analytical drawings).

Closely related to the preceding, from which it may be distinguished by its smaller foliage, smaller, ovate calyx-lobes, and inconspicuous, scarious bracts. It is guessed that Ecuador may be the true provenience of this species, as the apocynaceous flora of upper Panama and Ecuador have shown several notable affinities. Additional specimens and reliable data are greatly to be desired for this species.

38. Forsteronia adenobasis Muell.-Arg. Linnaea **30**: 412. 1860.

Thyrsanthus adenobasis (Muell.-Arg.) Miers, Apoc. So. Am. 96. 1878.

Stems relatively stout, minutely ferruginous-tomentulose when very young, soon becoming glabrate and conspicuously lenticellate when fully mature; leaves opposite, petiolate, broadly oval, apex very abruptly and shortly acuminate to obtuse, base obscurely and broadly cordate, 5.0–10.5 cm. long, 2.8–7.0 cm. broad, firmly membranaceous, above glabrous or minutely and very inconspicuously pubescent along the veins, glandular at the base of the midrib, beneath minutely and densely tomentulose; petioles 0.8–1.0 cm. long; inflorescence rather narrowly pyramidal-thyrsiform, terminal, about equalling to conspicuously surpassing the subtending leaves, bearing many small, white flowers; primary peduncle minutely ferruginous-tomentulose, ultimate branches determinate, minutely tomentulose; pedicels 0.13–0.2 cm. long, minutely tomentulose; bracts ovate, 0.1–0.25 cm. long, scarious; calyx-lobes ovate, acute, 0.1–0.2 cm. long, densely and minutely puberulent-papillate without, the alternate squamellae very minute, solitary; corolla-tube 0.1 cm. long, about 0.07–0.1 cm. in diameter at the base and 0.15–0.2 cm. in diameter at the orifice, without minutely and irregularly puberulent-papillate, essentially glabrous toward the base, within minutely villosulose, the lobes ovate-oblong, 0.25–0.3 cm. long, somewhat spreading, densely puberulent-papillate without, densely pilosulose within; stamen filaments 0.12–0.15 cm. long, agglutinated to the style above, the anthers 0.17–0.19 cm. long, wholly exserted, glabrous; ovary apocarpous, ovoid, about 0.03 cm. long, minutely hirtellous; stigma 0.15–0.17 cm. long; style 0.05–0.08 cm. long; nectaries about equalling the ovary, minutely pilosulose at the tips; follicles unknown.

BRITISH GUIANA: ad ripas fl. Pomeroon, Sept., 1843, *Schomburgk 1438* (B, TYPE, MBG, photograph and analytical drawings); in mixed forest, Moraballi Creek, near Bartica, alt. near sea-level, Oct. 10, 1929, *Sandwith 416* (K, NY, S, U, US); "Roraima," data incomplete, 1842–3, *Schomburgk 707* (B, BB, D, COTYPES).

39. **Forsteronia umbellata** (Aubl.) Woodson, comb. nov.

Apocynum umbellatum Aubl. Hist. Pl. Gui. Fr. **1**: 275; **3**: *pl. 108*. 1775.

Thenardia umbellata (Aubl.) Spreng. Syst. **1**: 636. 1825.

Thenardia (?) corymbosa Benth. in Hook. Jour. Bot. **3**: 246. 1841.

Forsteronia Schomburgkii A. DC. in DC. Prodr. **8**: 438. 1860, not Muell.-Arg.

Forsteronia Schomburgkii A. DC. β *umbellata* (Aubl.) A. DC. loc. cit. 1860.

Forsteronia macrophylla Muell.-Arg. Linnaea **30**: 411. 1860.

Thyrsanthus macrophyllus (Muell.-Arg.) Miers, Apoc. So. Am. 96. 1878.

Thyrsanthus Aubletianus Miers, loc. cit. 98. 1878.

Thyrsanthus corymbiferus Miers, loc. cit. 1878.

Stems relatively stout, minutely and inconspicuously puberulent when very young, soon becoming glabrate and conspicuously lenticellate when fully mature; leaves opposite, petiolate, broadly oval to oblong-oval, apex very abruptly and shortly acuminate-subcuspidate to obtuse, base rounded, frequently obscurely cordate, 7.8–15.0 cm. long, 4.5–9.2 cm. broad, firmly membranaceous, above glabrous, or minutely and indefinitely puberulent along the veins, glandular at the base of the midrib, beneath very minutely and generally puberulent or tomentulose; petioles 0.6-1.3 cm. long; inflorescence broadly subcorymbose-thyrsiform, terminal, shorter than the subtending leaves, bearing many small, white flowers; primary peduncle puberulent-papillate, ultimate branches determinate, puberulent-papillate throughout; pedicels 0.2–0.3 cm. long, minutely puberulent; bracts ovate, 0.1–0.25 cm. long, scarious or only slightly foliaceous; calyx-lobes ovate, acuminate, scarious or only slightly foliaceous, densely and minutely puberulent without, 0.15–0.17 cm. long, the alternate squamellae solitary, very minute; corolla-tube 0.125–0.15 cm. long, about 0.07–0.1 cm. in diameter at the base and 0.15–0.2 cm. in diameter at the orifice, irregularly and minutely puberulent-papillate without, villosulose within, the lobes broadly oblong, somewhat spreading, 0.3–0.35 cm. long, densely and minutely puberulent-papillate without, within densely and minutely pilosulose; stamen filaments 0.15–0.25 cm. long, the anthers 0.25 cm. long, barbellate at the tips, wholly exserted; ovary apocarpous, ovoid, about 0.07 cm. long, minutely hirtellous; stigma 0.18–0.2 cm. long; style 0.07–0.15 cm. long; nectaries nearly as long as the ovary, minutely barbellate; follicles unknown.

FRENCH GUIANA: Cayenne, date lacking, *collector unknown* (DC, MBG, photograph and analytical drawings).

BRAZIL: PARA: silva paludosa, Belem do Para, Oct. 31, 1926, *Ducke 21598* (B, U, US); silva non inundata, Bragança, Jan. 14, 1923, *Ducke 17482* (B).

The specimens cited above agree remarkably well with Aublet's illustration, particularly that from French Guiana, the type specimen of *F. macrophylla* Muell.-Arg.

40. Forsteronia Sandwithiana Woodson, spec. nov.

Fruticosa volubilis; ramulis sat crassiusculis, juventate minute inconspicueque ferrugineo-tomentulosis mox glabratis maturitate conspicue lenticellatis; foliis oppositis breviter petiolatis oblongo-ellipticis vel ovalibus apice abrupte brevissimeque acuminatis basi obscure cordatis 4.5–10.0 cm. longis 1.6–5.8 cm. latis firme membranaceis subcoriaceisve supra glabris nervo medio basi pauciglanduligero subtus nervo medio venisque minutissime puberulo-papillatis caeterumque glabris; petiolis 0.4–0.9 cm. longis minute puberulo-papillatis; inflorescentiis dense subcorymboso-thyrsiformibus terminalibus foliis multo brevioribus flores multas parvas virides gerentibus; pedunculo minutissime puberulo-papillato; pedicellis 0.12–0.2 cm. longis minute puberulo-papillatis; bracteis ovatis 0.1–0.15 cm. longis scariaceis; calycis laciniis lanceolatis acuminatis 0.3–0.35 cm. longis subfoliaceis extus minute puberulo-papillatis squamellis alternatis minutissimis solitariis; corollae tubo 0.13–0.15 cm. longo basi ca. 0.1 cm. diametro metiente faucibus ca. 0.13 cm. diametro metientibus extus minute papillatis intus lanulosis lobis late oblongis 0.4–0.42 cm. longis vix patulis extus puberulo-papillatis intus conspicue pilosulosis;

filamentis staminum 0.2–0.25 cm. longis antheris ca. 0.3 cm. longis omnino exsertis apice minute sparseque barbellatis; ovario apocarpo ovoideo ca. 0.05 cm. longo minute hirtello; stigmate 0.2 cm. longo; stylo 0.15–0.2 cm. longo; nectariis ovarium vix aequantibus glabris; folliculis ignotis.

Stems relatively stout, minutely and inconspicuously ferruginous-tomentulose when very young, soon becoming glabrate and conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-elliptic to oval, apex abruptly and very shortly acuminate, base obscurely cordate, 4.5–10.0 cm. long, 1.6–5.8 cm. broad, firmly membranaceous to subcoriaceous, above glabrous or essentially so, inconspicuously glandular at the base of the midrib, beneath very minutely puberulent upon the veins and midrib, otherwise glabrous; petioles 0.4–0.9 cm. long, minutely puberulent-papillate; inflorescence densely subcorymbose-thyrsiform, terminal, much shorter than the subtending leaves, bearing many small, green flowers; primary peduncle very minutely puberulent-papillate, ultimate branches determinate, minutely puberulent-papillate; pedicels 0.12–0.2 cm. long, minutely puberulent-papillate; bracts ovate, 0.1–0.15 cm. long, scarious; calyx-lobes lanceolate, long-acuminate, 0.3–0.35 cm. long, subfoliaceous, minutely puberulent-papillate without, the squamellae very minute, alternate, solitary; corolla-tube 0.13–0.15 cm. long, about 0.1 cm. in diameter at the base and 0.13 cm. in diameter at the orifice, minutely papillate without, within lanulose, the lobes broadly oblong, 0.4–0.42 cm. long, slightly spreading, puberulent-papillate without, within conspicuously and densely pilosulose; stamen filaments 0.2–0.25 cm. long, agglutinated to the style, the anthers 0.3 cm. long, wholly exserted, minutely and sparsely barbellate at the tips; ovary apocarpous, ovoid, about 0.05 cm. long, minutely hirtellous; stigma 0.2 cm. long; style 0.15–0.2 cm. long; nectaries somewhat shorter than the ovary, glabrous; follicles unknown.

BRITISH GUIANA: in mora forest, Moraballi Creek, near Bartica, alt. near sea-level, Sept. 24, 1929, *Sandwith 334* (K, NY, TYPE, U, MBG, photograph and analytical drawings); data incomplete, *Jenman 6316* (K, NY).

F. umbellata, F. adenobasis, and *F. Sandwithiana* form an extremely natural and closely knit group of species centering in the Guianas and northeastern Brazil. The group is distinguished from the neighboring species of *Forsteronia* having stamens wholly exserted by the larger leaves of somewhat firmer texture, the slightly spreading corolla-lobes, and the somewhat slighter tendency for the staminal filaments to become agglutinated to the style. As a matter of fact, the agglutination may not actually exist in *F. umbellata,* as the herbarium specimens available for dissection have been inconclusive in this regard. In *F. adenobasis* agglutination of the staminal filaments occurs only toward the apex of the style. *F. Sandwithiana* is distinguished from its immediately related congeners by means of its practically glabrous foliage, small, densely subcorymbose-thyrsiform inflorescence, and relatively long, subfoliaceous calyx-lobes. Mr. Sandwith describes the aspect of the liana as follows: ''Bush-rope in mora forest. Fl. green, but hairs in the throat and at tops of anthers are white.''

41. **Forsteronia spicata** (Jacq.) G. F. W. Meyer, Fl. Esseq. 135. 1818; A. DC. in DC. Prodr. **8**: 437. 1844.

Echites spicata Jacq. Enum. Pl. Carib. 13. 1760; Select. Stirp. Am. Hist. **1**: 34; **2**: *pl. 29.* 1763.
Parsonsia spicata (Jacq.) R. Br. Mem. Wern. Soc. **1**: 65. 1811.
Thyrsanthus corylifolia Griseb. Mem. Amer. Acad. N. S. **8**: 519. 1863.
Forsteronia corylifolia Griseb. Cat. Pl. Cub. 172. 1866.
Thyrsanthus spicatus (Jacq.) Miers, Apoc. So. Am. 95. 1878.
Aptotheca corylifolia (Griseb.) Miers, loc. cit. 150, *pl. 21B.* 1878.

Stems relatively stout, minutely ferruginous-tomentulose when young, eventually becoming glabrate and conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, broadly oval to obovate-elliptic, apex very abruptly and shorty subcaudate-acuminate, infrequently to acute or obtuse upon the lower, base broadly obtuse or rounded, 6–16 cm. long, 3.5–9.0 cm. broad, firmly membranaceous, above very sparsely and minutely pilosulose, more densely so along the veins, occasionally glabrate, inconspicuously glandular at the base of the midrib, beneath minutely and rather sparsely tomentulose, rarely glabrate; petioles 0.4–1.0 cm. long, indument as upon the stem; inflorescence subspiciform-thyrsiform, both terminal and lateral at the upper nodes, much shorter than the subtending leaves, bearing numerous small, white flowers; primary peduncle minutely ferruginous-tomentulose, ultimate branches extremely reduced; pedicels usually less than 0.05 cm. long, scarcely manifest; bracts ovate, 0.1–0.5 cm. long, somewhat foliaceous; calyx-lobes ovate, acute to acuminate, 0.25–0.4 cm. long, densely and minutely tomentulose without, slightly foliaceous, the alternate squamellae solitary, or rarely in groups of 2–3; corolla-tube 0.15–0.21 cm. long, about 0.1–0.12 cm. in diameter at the base, 0.2–0.25 cm. in diameter at the orifice, without essentially glabrous or minutely papillate above, villosulose within, the lobes oblong-ovate, 0.35–0.4 cm. long, widely spreading, puberulent-papillate without, densely pilosulose within; stamen filaments 0.25–0.3 cm. long, agglutinated to the style, the anthers 0.23–0.28 cm. long, widely exserted, glabrous; ovary syncarpous, ovoid, about 0.065 cm. long, densely tomentulose; stigma 0.12–0.16 cm. long; style 0.16–0.23 cm. long; nectaries much shorter than the ovary; follicles syncarpous, relatively stout and rigid, continuous, 12–19 cm. long, minutely and densely ferruginous-tomentulose when immature, eventually becoming glabrate; seeds 0.9–1.0 cm. long, the brilliantly tawny coma 3.1–4.5 cm. long.

CUBA: HAVANA: near mangrove swamps at Boca Ciega between Tarara and Guanabo, in thickets a little farther inland, Oct. 15, 1921, *Ekman 13334* (B, S); Tarapaste, Lomas de la Jaula, in frut. scand., June 11, 1914, *Ekman 1297* (B, S); MATANZAS: near mouth of the Bueyvaca, Aug. 28, 1903, *Britton & Wilson 10* (NY); SANTA CLARA: climbing on trees, attractive to bees, La Sierra, alt. 500–800 ft., July 9, 1929, *Jack 7397* (AA, FM, NY, S, US); climbing on bushes and trees, mahogany pasture, Limones, Soledad, Cienfuegos, July 16, 1930, *Jack 8013* (AA, FM, S, US); climbing on trees, Guabairo, Soledad, Cienfuegos, Nov. 26, 1928, *Jack 6730* (AA, FM, S); ad Pozo Azul, alt. 150 m., April, 1889, *Eggers 5347* (B); ORIENTE: in pascuis, vulgar, Santiago (ad Santiago Bay), Oct. 21, 1916, *Ekman 8020* (S); in dumetis ad Rio Jagua, Bayate, July 10, 1915, *Ekman 6221* (S); in sylva, Sabanaso (prope Mir ad occident. versus), Oct. 26, 1915, *Ekman 6514* (S); ad Rio Grande prope Sevilla, July 1, 1918, *Ekman 9314* (S); DATA INCOMPLETE: *Wright 1664* (B, BB, Bx, Camb., D, G, MBG, NY, S, US).

MEXICO: GUERRERO: Acapulco, date lacking, *Henke s.n.* (M); Llanos de Temalhuacan, alt. 50 m., July 31, 1898, *Langlassé 261* (B, D, US); CHIAPAS: banks of creek near Monserrate, July, 1925, *Purpus 10347* (NY).

GUATEMALA: ZACAPA: Gualan, alt. 620 ft., June 20, 1909, *Deam 6368* (FM, G, MBG, NY, US).

NICARAGUA: MANAGUA: exact locality lacking, Oct. 8, 1927, *Chaves 313* (FM, US).

SAN SALVADOR: SANTA ANA: exact locality lacking, 1924, *Calderon 2176* (US).

COLOMBIA: MAGDALENA: Santa Marta, alt. 100 ft., May, 1898-1901, *H. H. Smith 884* (B, Bx, D, FM, G, MBG, NY, S, U, US); ATLANTICO: Barranquilla, June, 1927, *Elias 222* (US); DATA INCOMPLETE: "Rio Magdal., April, 1801," *Humboldt & Bonpland 1296* (B); "Nova Granata," date lacking, *Triana 1920* (B).

This species breaks down the carpological distinction between the American *Forsteronia* and the Asiatic *Parsonsia*. The affinity of *F. spicata* is distinctly with the remaining American species, however. It appears probable that the only absolute morphological distinction of *Forsteronia* and *Parsonsia* capable of superficial detection may lie in the presence or absence of the dorsal foliar foveae. The use of this character among certain genera of Apocynaceae indigenous to the Old and the New Worlds is intended for publication in the near future.

42. Forsteronia simulans Woodson, Ann. Mo. Bot. Gard. **21**: 621. 1934.

Stems relatively stout, glabrous, conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-elliptic, apex acute, base obtuse to somewhat cuneate, 2–5 cm. long, 0.7–2.2 cm. broad, coriaceous or subcoriaceous, glabrous throughout, above inconspicuously glandular at the base of the midrib, beneath paler, the secondary venation subhorizontal; petioles 0.3–0.5 cm. long; inflorescence corymbose-subumbellate, evidently simple (or very obscurely compound ?), terminal, about equalling the subtending leaves, bearing numerous small, yellowish-green flowers; peduncle minutely papillate; pedicels 0.5–0.6 cm. long, minutely papillate; bracts ovate-lanceolate, 0.15–0.2 cm. long, slightly foliaceous; calyx-lobes ovate, obtuse, 0.15–0.2 cm. long, glabrous or very minutely papillate without, the alternate squamellae solitary; corolla-tube about 0.25 cm. long, about 0.125 cm. in diameter at the base, about 0.15 cm. in diameter at the orifice, essentially glabrous without, minutely puberulent within, the lobes oblong-ovate, obtuse, about 0.2 cm. long, spreading, essentially glabrous without and within, the margins minutely and rather sparsely ciliolate; staminal filaments about 0.15 cm. long, agglutinated to the style; anthers about 0.2 cm. long, wholly exserted, glabrous; ovary apocarpous, ovoid, about 0.06 cm. long, glabrous; stigma about 0.2 cm. long; style about 0.2 cm. long; nectaries about equalling the ovary; follicles unknown.

COLOMBIA: SANTANDER DEL NORTE: eastern slope of Paramo del Hatico, en route from Toledo to Pamplona, alt. 2300 m., edge of woods, March 12, 1927, *Killip & Smith 20568* (NY, TYPE, MBG, photograph and analytical drawings).

43. Forsteronia floribunda (Sw.) G. F. W. Meyer, Fl. Esseq. 135. 1818; A. DC. in DC. Prodr. **8**: 437. 1844; Miers, Apoc. So. Am. 243. 1878.

Echites floribunda Sw. Prodr. 52. 1788.

Parsonsia floribunda (Sw.) R. Br. Mem. Wern. Soc. **1**: 65, 1811.

Forsteronia Alexandri Griseb. Fl. Brit. W. I. 412. 1861.

Stems relatively stout, glabrous or essentially so, very inconspicuously and minutely lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-elliptic to broadly oval, apex very shortly and abruptly acuminate to obtuse, base broadly obtuse, 4–11 cm. long, 0.8–5.0 cm. broad, coriaceous, glabrous throughout, the secondary venation subhorizontal and relatively dense, eglandular, somewhat nitidulous above, conspicuously paler beneath; petioles 0.35–0.8 cm. long; inflorescence aggregate dichasial to thyrsiform, terminal, somewhat shorter than the subtending leaves, bearing many small, greenish-white flowers; peduncle very minutely papillate; pedicels 0.3–0.4 cm. long, somewhat accrescent in fruit, minutely papillate; bracts ovate, 0.05–0.15 cm. long, scarious, persistent; calyx-lobes ovate, acute to obtuse, 0.21–0.3 cm. long, essentially glabrous or very minutely and indefinitely papillate without, the alternate squamellae solitary or in groups of 2–3; corolla-tube 0.2–0.3 cm. long, about 0.08–0.125 cm. in diameter at the base and 0.175–0.25 cm. in diameter at the orifice, glabrous or very minutely and indefinitely papillate without, villosulose within, the lobes oblong-lanceolate, acute to obtuse, 0.39–0.45 cm. long, widely spreading, essentially glabrous without and within; staminal filaments 0.3–0.4 cm. long, exappendiculate, agglutinated to the style, the anthers 0.25–0.3 cm. long, wholly exserted, glabrous; ovary apocarpous, ovoid, minutely and sparsely pilosulose to essentially glabrate, about 0.08 cm. long; stigma 0.1–0.12 cm. long; style 0.3–0.4 cm. long; nectaries somewhat shorter than the ovary; follicles relatively long and slender, continuous or only indefinitely undulated, subparallel or somewhat tortuous to sharply divaricate, 16–30 cm. long, glabrous; seeds 0.7–0.9 cm. long, the pale tawny coma 1.5–2.1 cm. long.

JAMAICA: woodlands near Newport, Parish of Manchester, Sept. 3–7, 1908, *Britton 3196* (B, FM, NY, US); rocky wooded hill, Troy, Cockpit Country, Sept. 13–18, 1906, *Britton 641* (NY); near Troy, alt. 2000 ft., April, 1916, *Perkins 1100* (B); same locality, March 23, 1917, *Perkins 1378* (B, D); Farm Pen, alt. 200 ft., Aug. 23, 1895, *Campbell 5831* (B, FM, NY); growing over bushes, road to Hagley Gap, alt. 1800 ft., July 10, 1903, *Harris 5903* (B, FM, NY); Stony Hill, Jan. 22, 1903, *Harris 8440* (B); Hope Gardens, June 3, 1903, *Harris 8599* (B, FM, US); Schwallenburgh, St. Ann, Jan. 26, 1898, *Harris 7042* (B, NY); data incomplete: *Alexander s.n.* (B, NY); *Bertero s.n.* (B); *Swartz s.n.* (S, TYPE, MBG, photograph and analytical drawings).

Popular names for this species are said to be "Milk Withe" and "Rubber Withe." Because of its isolation in Jamaica, it is remarkably constant and free of conspicuous variability. In this regard it resembles *Mandevilla torosa* (Jacq.) Woodson, also the only species of its genus upon the island.

44. Forsteronia peninsularis Woodson, spec. nov.

Fruticosa volubilis altitudine ignota; ramulis crassiusculis juventate minutissime puberulo-papillatis mox glabratis maturitate cortice brunneis conspicue lenticellatis; foliis oppositis longiuscule petiolatis oblongo-ellipticis apice anguste acutis acuminatisve basi obtusis 4.5–5.5 cm. longis 1.7–2.2 cm. latis firme membranaceis glaberrimis utrinque opacis eglandulosis nervis secundariis sat remotis arcuatis; petiolis 0.5–0.8 cm. longis glabris; inflorescentiis subthyrsiformibus terminalibus foliis paululo brevioribus flores multas parvas viridi-albidas

gerentibus; pedunculo minute puberulo-papillato; pedicellis 0.2–0.25 cm. longis ut in pedunculo vestitis; calycis laciniis ovatis obtusis 0.15 cm. longis extus puberulo-papillatis; corollae tubo 0.2 cm. longo basi ca. 0.08 cm. diametro metiente faucibus ca. 0.1–0.125 cm. extus prope orificium minute puberulo-papillato caeterumque glabro intus villosulo lobis oblongo-ellipticis obtusis 0.4–0.425 cm. longis ca. 0.125 cm. latis extus puberulo-papillatis intus papillatis reflexis; antheris 0.25 cm. longis valde exsertis filamentis stylum agglutinatis laxe pilosulis; ovario ovoideo ca. 0.1 cm. longo dense minuteque puberulo; nectariis haud concrescentibus ovarium ca. dimidio aequantibus; stigmate ca. 0.09 cm. longo; folliculis teretibus gracilibus glabris plus minusve falcatis maturitate non visis; seminibus ignotis.

Stems relatively stout, very minutely puberulent-papillate when young, soon becoming glabrate, conspicuously lenticellate when fully mature; leaves opposite, petiolate, oblong-elliptic, apex narrowly acute to acuminate, base obtuse, 4.5–5.5 cm. long, 1.7–2.2 cm. broad, firmly membranaceous, glabrous, opaque, eglandular, secondary venation relatively distant, arcuate; petiole 0.5–0.8 cm. long, glabrous; inflorescence subthyrsiform, broadly pyramidal in outline, terminal, somewhat shorter than the subtending leaves, bearing numerous greenish-white flowers; peduncle minutely puberulent-papillate; pedicels 0.2–0.25 cm. long, clothed with a similar indument to that of the peduncle; calyx-lobes ovate, obtuse, 0.15 cm. long, puberulent-papillate without; corolla-tube 0.2 cm. long, about 0.08 cm. in diameter at the base and 0.1–0.125 cm. at the orifice, minutely puberulent-papillate toward the orifice without, glabrous to glabrescent below, villosulose within, the lobes oblong-elliptic, obtuse, 0.4–0.425 cm. long, about 0.125 cm. broad, without puberulent-papillate, within papillate, reflexed; anthers 0.25 cm. long, glabrous, the filaments exappendiculate, laxly pilosulose, agglutinated to the style; ovary ovoid, apocarpous, about 0.1 cm. long, densely and minutely puberulent; stigma 0.09 cm. long; nectaries about half equalling the ovary; immature follicles terete, relatively slender, more or less falcate, glabrous; seeds unknown.

BRITISH HONDURAS: Maskall, Northern River, July 16, 1934, *Gentle 1281* (MBG, TYPE).

Differing from *F. floribunda* (Sw.) G. F. W. Meyer, which it closely simulates, in the firmly membranaceous texture and arcuate venation of the foliage, and conspicuously puberulent-papillate corolla.

45. **Forsteronia portoricensis** Woodson, Ann. Mo. Bot. Gard. **21**: 618. 1934.

Stems relatively stout, glabrous, or very minutely papillate when young, eventually becoming inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-elliptic to oval, apex very shortly and abruptly acuminate to acute or obtuse, base broadly obtuse, 3.2–9.0 cm. long, 1.3–4.7 cm. broad, coriaceous, the margin somewhat revolute upon desiccation, secondary veins arcuate and relatively distant, wholly glabrous, eglandular, nitidulous above, somewhat paler beneath; petioles 0.4–0.6 cm. long; inflorescence aggregate dichasial, terminal, about equalling or somewhat shorter than the subtending leaves, bearing many small, red or flesh-colored flowers; peduncle minutely puberulent-papillate to glabrate; pedicels 0.2–0.3 cm. long, papillate or infrequently minutely and sparsely puberulent-papillate; bracts ovate, 0.1–0.25 cm. long, scarious; calyx-lobes ovate, acute to obtuse, 0.18–0.3 cm. long, scarious, minutely papillate to essentially glabrous without, the alternate squamellae in groups of 2–4; corolla-tube 0.15–0.2 cm. long, about 0.12–0.15 cm. in diameter at the base and 0.18–0.2 cm. in diameter at the orifice, glabrous without, glabrous or very indistinctly papillate within, the lobes oblong-ligular, obtuse, 0.4–0.5 cm. long, widely spreading, glabrous within and without, the margin frequently minutely and sparsely ciliolate; staminal filaments 0.3–0.32 cm. long, exappendiculate, agglutinated to the style, the anthers 0.25–0.3 cm. long, wholly exserted, glabrous; ovary apocarpous, ovoid, about 0.07 cm. long, minutely puberulent to essentially glabrous; stigma 0.1–0.13 cm. long; style 0.25–0.3 cm. long; nectaries about equalling the ovary; follicles relatively slender, acuminate, somewhat flexuose, reflexed-divaricate, more or less falcate, 14–19 cm. long, glabrous; seeds 0.9–1.0 cm. long, the pale tawny coma 1.8–2.0 cm. long.

PORTO RICO: prope Humacao in fruticetis litoralibus ad "Candelero," Sept. 29, 1886, *Sintenis 5195* (B, TYPE, MBG, photograph and analytical drawings); Sierra de Naguabo ad Rio Blanco, in silv. prim., Sept. 5, 1886, *Sintenis 5357* (B, Bx, S); prope Jabucoa, in sylv. prim. mont. "Guayava," ad "La Pandura," Oct. 12, 1886, *Sintenis 5306* (B); prope Aybonito in Barrio del Pasto, Febr. 25, 1885, *Sintenis 2866* (B, US); Maricao, in sylvis montis "Alegrillo," Nov. 26, 1884, *Sintenis 273* (B, M, S, US); Sa. de Luquillo, in monte Jimenes, July, 1885, *Sintenis 1622* (B, D, FM, NY, US); Playa de Humacao in fruticetis paludosis, June, 1881, *Eggers 438* (B, BB, Bx, D); pr. Mayaguez, 1875, *Krug 709* (B); pr. Ciales in fruticetis ad "Torrecilla," May 9, 1887, *Sintenis 6823* (B); prope Bayamon in fruticetis, Oct., 1887, *Stahl 743* (B); Luquillo Mountains, July 14, 1902, *Wilson 214* (B, NY); data incomplete, *Wydler 209* (B, DC, NY); Sierra de Luquillo, 1854, *Blauner 181* (DC); Rio Piedras, May 7, 1912, *Johnston 357* (NY).

46. Forsteronia corymbosa (Jacq.) G. F. W. Meyer, Fl. Esseq. 133. 1818; A. DC. in DC. Prodr. **8**: 437. 1844; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4²**: 187. 1895.

Echites corymbosa Jacq. Enum. Pl. Carib. 13. 1760; Select. Stirp. Am. Hist. **1**: 34; **2**: *pl. 30.* 1763.

Periploca umbellata Aubl. Hist. Pl. Gui. Fr. **1**: 273. 1775, fide Urban.

Parsonsia corymbosa (Jacq.) R. Br. Mem. Wern. Soc. **1**: 65. 1811.

Thyrsanthus corymbosus (Jacq.) Miers, Apoc. So. Am. 97. 1878.

Stems relatively stout, glabrous or essentially so, rather inconspicuously lenticellate when fully mature; leaves opposite petiolate, obovate to broadly oval, apex obtuse or rounded to very shortly and abruptly submucronulate-acuminate, base broadly obtuse, 3–7 cm. long, 1.0–3.5 cm. broad, coriaceous, eglandular, margins somewhat revolute upon desiccation, secondary venation arcuate, relatively distant, glabrous and nitidulous above, beneath paler, glabrous, or very minutely and inconspicuously barbellate in the axils of the midrib; petioles 0.3–1.1 cm. long; inflorescence aggregate dichasial, terminal, about equalling or somewhat shorter than the subtending leaves, bearing many small, red, or infrequently flesh-colored flowers; primary peduncle minutely and rather irregularly puberulent-papillate to essentially glabrate, the ultimate branches determinate, very minutely puberulent-papillate to essentially glabrate; pedicels 0.2–0.5 cm. long, minutely puberulent-papillate to essentially glabrate; bracts ovate to ovate-lanceolate, 0.1–0.38 cm. long, scarious or only slightly foliaceous; calyx-lobes ovate, obtuse, 0.17–0.25 cm. long, scarious, papillate to essentially glabrous without, the alternate squamellae in groups of 2–4; corolla-tube 0.19–0.25 cm. long, about 0.1–0.125 cm. in diameter at the base and 0.125–0.25 cm. in diameter at the orifice, essentially glabrous without and within, the lobes oblong-ligular, 0.4–0.52 cm. long, widely spreading, minutely but definitely papillate within, rarely glabrate; staminal filaments exappendiculate, 0.28–0.35 cm. long, agglutinated to the style, the anthers 0.25–0.32 cm. long, widely exserted, glabrous; ovary apocarpous, ovoid, about 0.08 cm. long, minutely puberulent to essentially glabrous; stigma 0.07–0.1 cm. long; style 0.3 cm. long; nectaries about equalling the ovary; follicles relatively short and stout, sharply divaricate, rigid and nearly rectilinear, not acuminate, 11–14 cm. long, glabrous when fully mature; seeds 0.65–0.7 cm. long, the pale tawny coma 1.9–2.1 cm. long.

CUBA: HAVANA: in rupibus calcareis ad flum. Cojimar, June 14, 1914, *Ekman 1355* (S); MATANZAS: prope Mantanzas, 1849, *Rugel 343* (B, NY); SANTA CLARA: Calicita, July 24, 1895, *Combs 524* (B, FM, MBG, NY); Soledad, Cienfuegos, climbing on trees, Nov. 6, 1928, *Jack 6614* (AA, FM, S); PINAR DEL RIO: Bay of Mariel, Sept. 21, 1910, *Britton & Earle 7652* (FM, NY); CAMAGUEY; vicinity of Tiffin, Oct. 30–31, 1909, *Shafer 2872* (NY, US); ORIENTE: Yateras et Mt. Libanon, May, 1844, *Linden 1822* (B, Bx, D); along Gibara Carretera, north of Holguin, April 18, 1909, *Shafer 1447* (B, NY, US); Florida, in mont. sup. Daiquiri, alt. 750 m., June 28–29, 1914, *Ekman 1548* (S); Sabana Miranda prope Bayate ad margin. ‘‘savannas,’’ July 11, 1914, *Ekman 1937* (S); Sierra de Nipe ad Rio Piedra ad marg. sylvae, Oct. 4, 1919, *Ekman 9827* (S); Baracoa, in collibus, Jan. 8, 1915, *Ekman 4151* (S); data incomplete, *Wright 398* (B, Bx, Camb., D, MBG, NY, S).

HISPANIOLA: HAITI: Dep. du Sud, inter Cabaillon et Aux Cayes, Sept. 7, 1917, *Ekman 847* (S); wooded hill, alt. 650 m., île La Gonave, July 28, 1927, *Ekman 8730* (B, S); in Morne Coudré, Massif du Nord, Marmelade, alt. 750 m., May 29, 1927, *Ekman 8289* (B, US); Schattige Stellen, Passe David, Gonaives, May, 1900, *Buch 339* (B); prope Terreneuve, July, 1899, *Buch 176* (B); twining on shrub, trail north of ‘‘Digue Puits,’’ vicinity of La Vallé, Tortue Island, May 3–10, 1929, *Leonard & Leonard 15543* (MBG, US); sommet du Morne Bellevue, ouest de Nancivet, alt. 600–700 m., Aug. 31, 1908, *Christ 1937* (B); prope Pétionville, alt. 400–500 m., Aug. 17, 1891, *Picarda 813* (B); prope Payan ad viam ad fuentem versus, Jan., 1891, *Picarda 154* (B); SANTO DOMINGO: Sierra del Palo Quemado, alt. 500 m., May 10, 1887, *Eggers 1894* (B, D, M); in sylva montis, "Izabel de la Torée," alt. 300 m., July 30, 1887, *Eggers 1894b* (B); prope Puerto-Plata, July 2, 1887, *Eggers 1894c* (B); in pineto, prope Constanza, alt. 1190 m., July, 1910, *Tuerckheim 3476* (B, D, M, NY); prope Maniel de Ocoa, alt. 300 m., Oct., 1910, *Tuerckheim 3636* (B, D, M, NY); semi-arid pine region, Moncion, Prov. Monte Cristy, alt. 375 m., Oct. 9, 1929, *Valeur 226* (D, MBG, NY, US); prope Barahona, July, 1910, *Fuertes 410* (B, D, FM, MBG, NY, S, US).

An interesting account of the aspect of these plants is recorded by Christ: "Liane très-longue, ligneuse, affectionnant, semble-t-il, de Manguier, sur les branches les plus élevés duquel elle s'étale. Fleurs rouges foncés, nombreux, ne poussant qu'à la partie superieure de la tige étalée. Les fruits ont une double position: au début relevés l'un vers l'autre et se touchant aux extremités. À maturité écartés completement l'un de l'autre, sur une même ligne horizontal."

Ekman 8730 bears flowers described as "pallide carneis" by the collector. These plants may eventually be found to represent a color form. The typical color of the flowers is dark red. The dried specimens show the flowers to be much paler than all others examined.

Subgen. II. PTERANTHERA Woodson, subgen. nov.

Stamen filaments bearing a conspicuous, alate, membranaceous appendage just below the insertion of the anther. *Spp. 47–48.*

KEY TO THE SPECIES

a. Inflorescence glabrous or essentially so; leaves firmly membranaceous, the margin not revolute in desiccation, 7–15 cm. long............*47. F. refracta*

aa. Inflorescence minutely puberulent to puberulent-papillate, at least in part; leaves coriaceous, the margin somewhat revolute in desiccation, 6–7 cm. long..*48. F. fallax*

47. Forsteronia refracta Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 97. 1860; Miers, Apoc. So. Am. 244. *pl. 35B.* 1878.

Forsteronia floribunda Muell.-Arg. loc. cit. 96. 1860, not G. F. W. Meyer.

Forsteronia lagoënsis Muell.-Arg. in Warming, Kjoeb. Vidensk. Meddel. 108. 1869.

Thyrsanthus myrianthus Miers, loc. cit. 105. 1878.

Forsteronia refracta Muell.-Arg. var. *contracta* Taub. in Engl. Bot. Jahrb. **21**: 448. 1896.

Stems relatively stout, glabrous, rather inconspicuously lenticellate; leaves opposite or infrequently ternate, shortly petiolate, rather narrowly elliptic-oblanceolate to broadly oval, apex shortly and abruptly acuminate to acute, infrequently obtuse upon older specimens, 7–15 cm. long, 2.5–8.0 cm. broad, firmly membranaceous, above glabrous, inconspicuously glandular at the base of the midrib, glabrous beneath, or very minutely and sparsely ciliolate in the axils of the midrib; petioles 0.2–0.9 cm. long; inflorescence laxly thyrsiform, terminal, usually greatly surpassing the subtending leaves, occasionally somewhat shorter, bearing many small, white flowers; primary peduncle glabrous, ultimate branches glabrous, determinate; pedicels 0.17–0.35 cm. long, glabrous; bracts ovate to ovate-lanceolate, deciduous, 0.05–0.2 cm. long, scarious; calyx-lobes broadly ovate, acute to obtuse, 0.09–0.11 cm. long, scarious, glabrous without, the squamellae 3–4 times as many as the lobes, regularly and indefinitely distributed; corolla-tube 0.1–0.12 cm. long, about 0.05–0.07 cm. in diameter at the base and 0.2–0.225 cm. in diameter at the orifice, glabrous without, or essentially so, puberulent-papillate within, the lobes ovate, 0.2–0.28 cm. long, widely spreading, densely and conspicuously pilosulose within; staminal filaments 0.1–0.12 cm. long, distinctly bi-alate toward the insertion of the anthers, the anthers about 0.1 cm. long, glabrous, exserted; ovary apocarpous, ovoid, about 0.07 cm. long, glabrous, or very minutely and sparsely pilosulose toward the tips; stigma 0.05–0.08 cm. long; style about 0.2 cm. long; follicles relatively long and stout, conspicuously and rather distantly moniliform, relatively rigid and subparallel, occasionally somewhat divaricate, 28–52 cm. long, glabrous; seeds 2.7–2.9 cm. long, the brilliant tawny coma 5.0–5.2 cm. long.

VENEZUELA: MERIDA: prope Coloniam Tovar, 1854–5, *Fendler 2381* (MBG).

BRAZIL: PARA: understory in cut-over wood, Japanese Colony, Thomé Assu, Districto Acara, July 16, 1931, *Mexia 5915 in part* (MBG); RIO DE JANEIRO: Theresopolis, alt. 900 m., Oct. 11, 1929, *Brade 9672* (B); data incomplete: *Glaziou 7756* (B); *Glaziou 2091* (Bx); MINAS GERAES: in shade of forest, road to São

Miguel, alt. 710 m., frequent, Oct. 29, 1930, *Mexia 5234* (MBG); Lagôa Santa, Aug. 29, 1864, *Engle s.n.* (C); data incomplete: *Lhotzky s.n.* (B); *Araujo 11935* (B); *Gardner 5012* (B, DC, NY, US); PARANA: in silva primaeva, Porto de Cima, Dec. 23, 1908, *Dusen 7445* (Bx, D, MBG, NY, US); DATA INCOMPLETE: *Sellow s.n.* (B, Bx, COTYPE, MBG, photograph and analytical drawings).

PARAGUAY: in altaplanitie et declivibus "Sierra de Amambay," Oct., 1907, *Rojas 10652* (B); in regione fluminis, Alto Parana, 1909–10, *Fiebrig 5380* (M).

ARGENTINA: MISIONES: San Pedro, Rosados de los Indios, Nov. 9, 1886, *Niederlein 1965* (B).

Considerable doubt remains concerning the identity of *Fendler 2381* from Venezuela and *Mexia 5915* from the state of Para, Brazil. Both specimens bear fruit, without flowers. In either case the fruit corresponds closely to that of authentic specimens of *F. refracta;* but the occurrence of the species in Venezuela and northern Brazil remains to be verified by more perfect records.

48. Forsteronia fallax Taub. in herb.

Fruticosa volubilis; ramulis sat crassiusculis glaberrimis maturitate conspicue lenticellatis; foliis oppositis brevissime petiolatis ellipticis apice obtusis rotundatisve basi obtusis subcuneatis 6–7 cm. longis 2.0–3.1 cm. latis coriaceis vel subcoriaceis margine post exsiccationem paulo revolutis glaberrimis nervo medio supra inconspicue glanduligero; petiolis 0.3–0.35 cm. longis; inflorescentiis laxe thyrsiformi-paniculatis terminalibus folia superantibus flores parvas multas albidas gerentibus; pedunculo minute puberulo-papillato vel basi glabriusculo ramulis minute puberulo-papillatis; pedicellis 0.07–0.1 cm. longis minute puberulo-papillatis; bracteis ovatis vel ovatolanceolatis deciduis 0.08–0.15 cm. longis scariaceis; calycis laciniis late ovato-deltoideis obtusis rotundatisve ca. 0.08 cm. longis scariaceis minutissime irregulariterque puberulo-papillatis squamellis alternatis solitariis minutissimis; corollae tubo ca. 0.07 cm. longo basi ca. 0.04 cm. diametro metiente faucibus ca. 0.15–0.17 cm. diametro metientibus extus glabris glabriusculisve intus minute villosulis lobis ovatis ca. 0.17 cm. longis patulis extus glabriusculis intus dense conspicueque pilosulis; filamentis staminum ca. 0.08 cm. longis apice appendiculatis; antheris ca. 0.8 cm. longis glabris exsertis; ovario oblongoovoideo apocarpo ca. 0.04 cm. longo minute papillato; stigmate

0.05–0.07 cm. longo; stylo ca. 0.01 cm. longo; nectariis ovario paululo brevioribus; folliculis ignotis.

Stems relatively stout, glabrous, conspicuously lenticellate when fully mature; leaves opposite, very shortly petiolate, elliptic, apex obtuse or rounded, base obtuse, subcuneate, 6–7 cm. long, 2.0–3.1 cm. broad, coriaceous or subcoriaceous, margin somewhat revolute after desiccation, glabrous throughout, inconspicuously glandular above at the base of the midrib; petioles 0.3–0.35 cm. long; inflorescence laxly thyrsiform-paniculate, terminal, somewhat surpassing the subtending leaves, bearing many small, white flowers; peduncle minutely puberulent-papillate to glabrous below, ultimate branches determinate, minutely puberulent-papillate; pedicels 0.07–0.1 cm. long, minutely puberulent-papillate; bracts ovate or ovate-lanceolate, 0.08–0.15 cm. long, scarious, deciduous; calyx-lobes broadly ovate-deltoid, obtuse or rounded, about 0.08 cm. long, scarious, minutely and irregularly puberulent-papillate without, the squamellae very minute, alternate, solitary; corolla-tube about 0.07 cm. long, about 0.04 cm. in diameter at the base and 0.15–0.17 cm. in diameter at the orifice, essentially glabrous without, minutely villosulose within, the lobes ovate, about 0.17 cm. long, widely spreading, essentially glabrous without, densely and conspicuously pilosulose within; staminal filaments about 0.08 cm. long, appendiculate above, the anthers about 0.08 cm. long, glabrous, wholly exserted; ovary oblong-ovoid, apocarpous, about 0.04 cm. long, minutely papillate; stigma 0.05–0.07 cm. long; style about 0.01 cm. long; nectaries somewhat shorter than the ovary; follicles unknown.

BRAZIL: RIO DE JANEIRO: data incomplete, *Glaziou 4080* (B, TYPE, MBG, photograph and analytical drawings).

EXCLUDED SPECIES

Forsteronia panniculata Casar. ex K. Sch. in Mart. Fl. Bras. **6**^{6}: 200. 1889, nom. nud. in synon. = **Molopanthera paniculata** Turcz. Bull. Soc. Nat. Mosc. **21**^{1}: 581. 1848.

Forsteronia Pavonii A. DC. in DC. Prodr. **8**: 438. 1844 = **Apocynum cannabinum** L. var. **glaberrimum** A. DC. loc. cit. 439. 1844.

The type specimen of *Forsteronia Pavonii,* an unnumbered collection by Pavon in the herbarium of Boissier at Geneva, shows itself typical of the glabrous variety of the frequent and widespread *Apocynum cannabinum* L. of temperate North America. Pavon's collection label is without locality. Just how the plant became confused with the tropical genus *Forsteronia* may be explained variously. The ultimate reason, naturally, is the failure of de Candolle to observe the conspicuous, sagittate enations at the base of the corolla-tube alternating with the staminal filaments, easily perceived from a simple dissection.

The accidental inclusion of the plant, perhaps from the collections of another botanist from temperate North America, with those of Pavon from Mexico and Peru may have completed the circumstantial evidence misplacing the plant systematically, for it is quite true that a superficial similarity exists between *Apocynum* and *Forsteronia* in the thyrsiform inflorescence and small flowers of either. A photograph accompanied by analytical drawings of the type specimen has been incorporated in the herbarium of the Missouri Botanical Garden. Miers (Apoc. So. Am. 243. 1878), without easy access to Pavon's specimen, erroneously referred to this species *Spruce 4908,* more correctly referable to *F. tarapotensis* K. Sch. (cf. p. (230)).

VI. SECONDATIA A. DC.

Secondatia A. DC. in DC. Prodr. **8**: 445. 1844; Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 107. 1860; Benth. & Hook. Gen. Pl. **2**: 723. 1876; Miers, Apoc. So. Am. 226. 1878; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 165. 1895.

Orthechites Urb. Symb. Ant. **6**: 36. 1909.

Lactescent, fruticose or suffruticose lianas. Stems volubile (or erect in *S. Macnabii* ?), terete, the branches opposite or alternate above. Leaves opposite, petiolate, entire, penninerved, eglandular; nodes minutely appendiculate. Inflorescence terminal, or both terminal and lateral, thyrsiform, bracteate, several-flowered. Calyx 5-parted, the lobes equal to subequal, cleft nearly to the receptacle, imbricated, bearing within solitary, or rarely paired, alternate squamellae. Corolla salverform, the tube straight, exappendiculate within, the limb actinomorphic, 5-parted, dextrorsely convolute. Stamens 5, the anthers connivent and agglutinated to the stigma, consisting of 2 parallel, linear sporangia borne ventrally near the apex of an enlarged, sagittate, narrowly 2-lobed, peltate connective; pollen granular; filaments short. Carpels 2, united at the apex by a common stylar shaft surmounted by the fusiform stigma (sessile in *S. floribunda* and *S. Duckei*); ovules numerous, several-seriate, borne upon an axile, binate placenta. Nectaries 5, more or less concrescent at the base. Follicles 2, apocarpous, broadly fusiform, dehiscent along the ventral suture, containing many dry, truncate, apically comose seeds.

Type species: *Secondatia densiflora* A. DC. in DC. Prodr. **8**: 445. 1844.

KEY TO THE SPECIES

- a. Corolla-tube 0.5–0.82 cm. long; species of South America.
  - b. Stigma supported by a short style; nectaries nearly equalling the ovary.
    - c. Corolla-lobes obliquely obovate, shorter than the tube.
      - d. Anthers minutely puberulent dorsally.............. *1. S. densiflora*
      - dd. Anthers glabrous.................................... *2. S. peruviana*
    - cc. Corolla-lobes oblong-dolabriform, equalling or slightly surpassing the tube.. *3. S. Schlimiana*
  - bb. Stigma sessile; nectaries much shorter than the ovary.
    - c. Corolla-lobes obliquely elliptic, 0.7–1.2 cm. long; ovary glabrous... *4. S. floribunda*
    - cc. Corolla-lobes oblong-linear, 2.2–2.5 cm. long; ovary minutely and sparsely puberulent....................................... *5. S. Duckei*
- aa. Corolla-tube about 1.5 cm. long; plants of Jamaica............ *6. S. Macnabii*

1. Secondatia densiflora A. DC. in DC. Prodr. **8**: 445. 1844; Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 108. *pl. 32. fig. 2.* 1860; Miers, Apoc. So. Am. 226. *pl. 32.* 1878; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 165. 1895.

Secondatia densiflora A. DC. β *parvifolia* Muell.-Arg. loc. cit. 1860.

Secondatia densiflora A. DC. var. *paraguariensis* Hassl. in Fedde, Rep. Sp. Nov. **12**: 263. 1913.

Secondatia densiflora A. DC. α *genuina* Muell.-Arg. ex Hassl. loc. cit. 264. 1913, sphalm.

Stems relatively stout, minutely papillate when very young, soon becoming glabrate and conspicuously lenticellate when fully mature; leaves broadly ovate-, obovate-, or oblong-elliptic, apex abruptly subcaudate-acuminate, base broadly obtuse or rounded, 3.5–11.5 cm. long, 1.5–6.5 cm. broad, firmly membranaceous to subcoriaceous, glabrous, essentially concolorous or only slightly paler beneath, the vein-ends immersed and relatively obscure; petioles 0.7–1.5 cm. long; inflorescence subcorymbose, terminal, or infrequently lateral as well, much shorter than the subtending leaves, bearing numerous small, white flowers; pedicels 0.35–0.6 cm. long, greatly accrescent in fruit, minutely papillate or essentially glabrous; bracts ovate or ovate-oblong, 0.1–0.3 cm. long, scarious or only slightly foliaceous; calyx-lobes ovate to ovate-oblong, obtuse, 0.15–0.25 cm. long, scarious, minutely papillate to essentially glabrous; corolla salverform, glabrous without, the tube 0.65–0.8 cm. long, about 0.1–0.12 cm. in diameter at the base, not conspicuously dilated at the insertion of the stamens, slightly narrowing toward the orifice, densely puberulent within, the lobes obliquely obovate, obtuse, 0.35–0.5 cm. long, glabrous, spreading; stamens inserted at about the lower ¼ of the corolla-tube, the anthers 0.35–0.4 cm. long, minutely puberulent dorsally; stigma 0.175–0.25 cm. long, surmounting a style of about equal length; ovary ovoid, about 0.07 cm. long, glabrous; nectaries concrescent at the base, slightly shorter than the ovary; follicles broadly fusiform, somewhat compressed laterally, 12–13 cm. long, about 2.0–2.5 cm. in greatest diameter, glabrous; seeds about 2 cm. long, the pale tawny coma 3.5–4.0 cm. long.

BRITISH GUIANA: Pirara, etc., 1841–2, *Schomburgk 421* (V); same locality, *Schomburgk 681* (B); data incomplete, *Schomburgk 599* (V, COTYPE); *Schomburgk 665* (D).

DUTCH GUIANA: fluv. Lawa, Oct., 1903, *Versteeg 451* (U).

BRAZIL: PIAUHY: exact locality lacking, 1883, *Netto 46* (US); MINAS GERAES: data incomplete, *Claussen 341* (B, COTYPE); RIO DE JANEIRO: Sumidouro, 1845, *Pohl s.n.* (V); data incomplete, *Sellow s.n.* (Bx); GOYAZ: data incomplete, *Gardner 3325* (B, D, COTYPE, NY, V); MATTO GROSSO: Cuyaba, Nov. 21, 1893, *Malme 1118* (B, D, S); Cuyaba, 1834, *Manso s.n.* (Bx); Rio Arimos, margins do rio, Dec., 1914, *Kuhlmann 1234* (US); Uferwald am oberen Paranatinga, Sept. 28, 1899, *Pilger 799* (B); SÃO PAULO: Rib. da Lagôa, Rio Feio, cerrado, Nov., 1905, *Edwall*

11242 (B); PARA: campos do Ariramba, prope flum. Jaramacaru, Dec. 2, 1910, *Ducke 21622* (B, US); Obidos, silva secundaria, Dec. 11, 1903, *Ducke 21641* (B); AMAZONAS: in Fellsgruppen des campo bei der Serra de Pracama, Rio Branco, Jan., 1909, *Ule 7940* (B); silva humosa non inundabili, São Paulo de Olivença, Aug. 19, 1929, *Ducke 22430* (B); DATA INCOMPLETE: *Riedel s.n.* (B, BB, NY, V); *Pohl 1845* (V); *Martius 967* (B, D, TYPE, M, NY, V, MBG, photograph and analytical drawings); *Glaziou 11179* (B).

BOLIVIA: SANTA CRUZ: Bañado del Rio Moreno, Prov. Cercado, alt. 450 m., Oct. 28, 1925, *Steinbach 7301* (B, D, FM, MBG, U); Bañado del Rio Perdiz, Prov. Sara, alt. 450 m., Oct. 30, 1916, *Steinbach 3113* (B, D); LA PAZ: Millaguaya, alt. 1000 m., Dec., 1917, *Buchtien 4371* (B, US); BENI: Riberalta, Sept. 28, 1923, *Kuhlmann 21873* (B, U, US).

PARAGUAY: in altaplanitie "Sierra de Amambay," Nov., 1912, *Hassler 11420* (D, V).

2. **Secondatia peruviana** Poeppig, Nov. Gen. **3**: 71. *pl. 281.* 1845; Miers, Apoc. So. Am. 228. 1878; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**²: 165. 1895.

Stems relatively slender, glabrous or essentially so, conspicuously lenticellate when fully mature; leaves ovate-elliptic, apex abruptly subcaudate-acuminate, base broadly obtuse or rounded, 5.2–9.5 cm. long, 2.2–5.0 cm. broad, membranaceous, glabrous, essentially concolorous or only slightly paler beneath, the vein-ends immersed and relatively obscure; petioles 0.7–1.5 cm. long; inflorescence subcorymbose, both terminal and lateral, much shorter than the subtending leaves, bearing numerous small, white flowers; pedicels 0.2–0.5 cm. long, glabrous or very minutely papillate; bracts ovate, 0.1–0.2 cm. long, scarious; calyx-lobes ovate, acute to obtuse, 0.1–0.15 cm. long, scarious, glabrous or very minutely ciliolate; corolla salverform, glabrous without, the tube 0.7–0.75 cm. long, about 0.125–0.15 cm. in diameter at the base, not conspicuously dilated at the insertion of the stamens, slightly narrowing toward the orifice, puberulent within, the lobes obliquely obovate, obtuse or rounded, 0.4–0.55 cm. long, glabrous, spreading; stamens inserted at about the lower ¼ of the corolla-tube, the anthers 0.4–0.45 cm. long, glabrous; stigma 0.18–0.2 cm. long, supported by a style of about equal length; ovary ovoid, somewhat less than 0.1 cm. long, glabrous; nectaries concrescent at the base, slightly shorter than the ovary; mature follicles unknown.

PERU: LORETO: Cuchero et in sylvis montanis ad Pampayaro, Dec., 1829, *Poeppig 1582* (B, BB, MBG, V, TYPE); Stromgebiet des Maranon, Santiago-Mündung, Oct. 24, 1924, *Tessmann 4359* (B, D).

The immature fruit of this species is figured by Poeppig (loc. cit. *pl. 281. fig. 9.* 1845) as broadly ovoid, and sharply divaricate, and described as about 1 inch in length. Bentham and Hooker (Gen. Pl. **2**: 723. 1876) favored the rejection of *S. peruviana* from the genus *Secondatia* upon this evidence, believing the fruit of the genus to be narrowly linear. The only follicles known of the type species (*Martius 967* in Herb. Vindob. and *Manso s.n.* in Herb. Brux.), however, are broadly fusiform, and are suggested plainly by Poeppig's drawings of the immature mericarps of *S. peruviana.* It appears wholly probable that the fruits of *S. densiflora* and *S. peruviana* are no more than specifically distinct when mature.

3. **Secondatia Schlimiana** Muell.-Arg. Linnaea **30**: 416. 1860; Miers, Apoc. So. Am. 227. 1878.

Stems relatively stout, minutely puberulent-papillate when very young, soon becoming glabrate and conspicuously lenticellate when fully mature; leaves broadly oval to ovate-elliptic, apex abruptly subcaudate-acuminate, base broadly obtuse or rounded, 3.7–6.0 cm. long, 1.7–3.0 cm. broad, membranaceous, glabrous, essentially concolorous or only slightly paler beneath, the vein-ends immersed and relatively obscure; petioles 0.7–1.2 cm. long; inflorescence subcorymbose, terminal, or lateral as well, much shorter than the subtending leaves, bearing numerous small, white flowers; pedicels 0.2–0.4 cm. long, minutely puberulent-papillate to essentially glabrous; bracts ovate-oblong, 0.1–0.2 cm. long, scarious or only slightly foliaceous; calyx-lobes ovate-suborbicular, broadly obtuse or rounded, 0.15–0.2 cm. long, minutely puberulent-papillate without, scarious; corolla salverform, glabrous without, the tube 0.7–0.8 cm. long, about 0.175 cm. in diameter at the base, not conspicuously dilated at the insertion of the stamens, slightly narrowing toward the orifice, puberulent within, the lobes oblong-dolabriform, obtuse or rounded, 0.9–1.0 cm. long, glabrous, reflexed or widely spreading; stamens inserted at about the lower 1/4 of the corolla-tube, the anthers 0.4–0.45 cm. long, minutely puberulent dorsally; stigma 0.17–0.2 cm. long, supported by a style of about equal length; ovary ovoid, about 0.1 cm. long, glabrous; nectaries concrescent at the base, about as long as the ovary; follicles unknown.

COLOMBIA: SANTANDER DEL NORTE: Ocana, alt. 4000 pp., May, 1846–52, *Schlim 510* (BB, TYPE, BM, Bx, D, MBG, photograph and analytical drawings).

4. **Secondatia floribunda** A. DC. in DC. Prodr. **8**: 446. 1844; Muell.-Arg. in Mart. Fl. Bras. **6**[1]: 109. 1860; Miers, Apoc. So. Am. 227. 1878.

Secondatia foliosa A. DC. loc. cit. 1844; Muell.-Arg. loc. cit. *pl. 32. fig. 1.* 1860; Miers, loc. cit. 1878; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**[2]: 165. 1895.

Secondatia foliosa A. DC. β. *Gardneri* A. DC. loc. cit. 1844; Muell.-Arg. loc. cit. 1860.

Secondatia foliosa A. DC. γ. *petiolaris* Muell.-Arg. loc. cit. 1860.

Secondatia foliosa A. DC. δ. *lanceolata* Muell.-Arg. loc. cit. 1860.

Stems relatively slender, glabrous or essentially so, conspicuously lenticellate when fully mature; leaves ovate-elliptic to broadly oval, abruptly acuminate to subcaudate-acuminate, base broadly obtuse or rounded, 3–9 cm. long, 1.5–4.5 cm. broad, firmly membranaceous to subcoriaceous, glabrous, conspicuously pallid beneath, the vein-ends very conspicuous and reticulate; petioles 0.4–1.4 cm. long; inflorescence subcorymbose, terminal, or lateral as well, somewhat shorter than the subtending leaves, bearing numerous small, white flowers; pedicels 0.6–0.8 cm. long, glabrous or very minutely puberulent-papillate; bracts ovate to ovate-lanceolate, 0.075–0.125 cm. long; calyx-lobes ovate, acute, 0.15–0.2 cm. long, scarious, minutely puberulent-papillate to essentially glabrous without; corolla salverform, glabrous without, the tube 0.55–0.65 cm. long, about 0.1–0.125 cm. in diameter at the base, conspicuously dilated at the insertion of the stamens, slightly narrowing toward the orifice, the lobes obliquely elliptic, broadly acute, 0.7–1.2 cm. long, glabrous, widely spreading; stamens inserted barely above the base of the corolla-tube, the anthers 0.33–0.35 cm. long, long-acuminate, minutely puberulent dorsally; stigma sessile, 0.15–0.18 cm. long; ovary ovoid, about 0.125 cm. long, glabrous or very minutely papillate; nectaries concrescent at the base, much shorter than the ovary; follicles unknown.

BRAZIL: CEARA: data incomplete, *Gardner 1762* (NY, US, V); BAHIA: forêts, Jacobina, date lacking, *Blanchet 3370* (B, Bx, DC, TYPE, NY, V, MBG, photograph and analytical drawings); Jacobina, date lacking, *Blanchet 3635* (DC, M, V); Capão bei Sincora, Nov., 1906, *Ule 7118* (B); MINAS GERAES: Vespasiano, Nov., 1915, *Hoehne 6251* (B); cut-over woods on hill, Fazenda de Jose Alexandre, alt. 725 m., Nov. 20, 1930, *Mexia 5334a* (MBG); data incomplete, *Claussen s.n.* (V); Catingas, locis aridis ad fl. Rio Fermozo, Sept., year lacking, *Martius s.n.* (M); Lagôa Santa, Oct. 1864, *Warming s.n.* (C, NY); DATA INCOMPLETE: *Glaziou 21720* (B, Bx); *Glaziou 12941* (B, Bx); *Pohl 1846* (B, V).

Secondatia foliosa differs from the type specimen of *S. floribunda* only in slight and insignificant differences in dimension of the flowers and foliage. It appears significant that both were collected in the vicinity of Jacobina, state of Bahia, the type specimens being *Blanchet 3635* and *Blanchet 3370* respectively. One can scarcely restrain the opinion that varietal or even specific distinctions were frequently made by A. de Candolle and Mueller upon characteristics which are usually interpreted as individual variations among a wide selection of study specimens.

5. **Secondatia Duckei** Mgf. Notizblatt **11**: 338. 1932.

Stems relatively stout, glabrous, conspicuously lenticellate when fully mature; leaves broadly ovate-lanceolate to oblong-elliptic, apex rather gradually acuminate to subcaudate-acuminate, base broadly obtuse or rounded, 7.5–12.5 cm. long, 3.0–5.2 cm. broad, firmly membranaceous to subcoriaceous, glabrous, conspicuously pallid beneath; petioles 0.8–1.0 cm. long; inflorescence much shorter than the subtending leaves, lax and relatively few-flowered; pedicels 0.4–0.6 cm. long, glabrous; bracts very minute; calyx-lobes ovate-trigonal, acute, 0.1–0.12 cm. long, glabrous, scarious; corolla salverform, glabrous without, the tube 0.8–0.82 cm. long, somewhat inflated at the insertion of the stamens, narrowing toward the orifice, puberulent within, the lobes linear or oblong-linear, 2.2–2.5 cm. long, glabrous, spreading; stamens inserted near the base of the corolla-tube, the anthers 0.43–0.45 cm. long, minutely puberulent dorsally; stigma sessile, 0.15–0.17 cm. long; ovary ovoid, 0.1–0.12 cm. long, sparsely and minutely puberulent; nectaries concrescent at the base, much shorter than the ovary; follicles unknown.

BRAZIL: AMAZONAS: Rio Negro super confluentiam flum. Curicuriary, silva non inundabili, Nov. 24, 1929, *Ducke 22432* (B, TYPE, US, MBG, photograph and analytical drawings).

6. **Secondatia Macnabii** (Urb.) Woodson, Ann. Mo. Bot. Gard. **19**: 385. 1932.

Orthechites Macnabii Urb. Symb. Ant. **6**: 37. 1909.

Stems relatively stout, glabrous or essentially so, inconspicuously lenticellate when fully mature; leaves lanceolate to oblong-lanceolate, apex acuminate, base acute to obtuse, 5–7 cm. long, 1.3–2.3 cm. broad, firmly membranaceous or chartaceous, glabrous; petioles 0.3–0.4 cm. long; inflorescence subcorymbose, terminal, bearing relatively few (3–6) small, white flowers; pedicels 0.3–0.4 cm. long, glabrous; bracts minute; calyx-lobes 0.2 cm. long, acute, minutely ciliolate; corolla salverform, glabrous without, the tube about 1.5 cm. long, about 0.15 cm. in diameter at the base, puberulent within, the lobes obliquely elliptic, acute, 0.7–0.8 cm. long, spreading; stamens inserted somewhat below midway within the corolla-tube, the anthers linear-lanceolate; stigma about 0.05 cm. long; ovary ovoid, glabrous; nectaries much shorter than the ovary; follicles unknown.

JAMAICA: exact locality and date lacking, *Macnab s.n.* (B, drawing of TYPE).

It has been impossible to examine the type specimen of this species, which was sent with other specimens from the herbarium at Edinburgh to the British Museum (Natural History) for examination by Fawcett and Rendle and has evidently been lost or destroyed. The drawing, together with Urban's description, presents no valid reason for not including the species with *Secondatia,* where it constitutes an element no more foreign to the type species than do *S. floribunda* and *S. Duckei.* For a relatively small island which has been known to botanical collectors for such a long time, Jamaica has produced a surprising number of mysterious species of plants known from single, insufficiently recorded specimens.

EXCLUDED SPECIES

Secondatia difformis (Walt.) Benth. & Hook. ex Miers, Apoc. So. Am. 99. 1878, in synon. (*Echites difformis* Walt. Fl. Carol. 98. 1788) = **Trachelospermum difforme** (Walt.) A. Gray, Syn. Fl. N. Am. **2**: 84. 1878.

Secondatia ferruginea (A. Rich.) Miers, loc. cit. 227. 1878 (*Echites ferruginea* A. Rich. in Sagra, Fl. Cub. **2**: 92. 1853) = **Angadenia Lindeniana** (Muell.-Arg.) Miers, loc. cit. 180. 1878 (*Rhabdadenia Lindeniana* Muell.-Arg. Linnaea **30**: 438. 1860).

Secondatia stans (A. Gray) Standl. Contr. U. S. Nat. Herb. **23**: 1165. 1924 (*Trachelospermum stans* A. Gray, Proc. Am. Acad. **21**: 394. 1886) = **Mandevilla foliosa** (Muell.-Arg.) Hemsl. Biol. Centr.-Am. Bot. **2**: 316. 1882 (*Amblyanthera foliosa* Muell.-Arg. Linnaea **30**: 427. 1860).

VII. TRACHELOSPERMUM Lem.

Trachelospermum Lem. Jard. Fleur. **1**: *pl. 61.* 1851; A. Gray, Syn. Fl. N. Am. **2**: 84. 1878.

Lactescent, suffruticose lianas. Stems volubile, terete, the branches alternate, occasionally becoming opposite after injury. Leaves opposite, petiolate, entire, penninerved, eglandular; nodes very inconspicuously stipulate. Inflorescence lateral and alternate in our species, thyrsiform, aggregate dichasial in our species. Calyx 5-parted, the lobes essentially equal, cleft nearly to the receptacle, imbricated, bearing within alternate pairs of minute, glandular squamellae in our species. Corolla salverform, in our species the tube relatively short, slightly dilated above the insertion of the stamens, exappendiculate within, the orifice not annulate, the limb actinomorphic, 5-parted, dextrorsely convolute. Stamens 5, the anthers included or the tips barely exserted in our species, connivent and agglutinated to the stigma, consisting of 2 parallel, uniformly fertile sporangia borne ventrally near the apex of an enlarged, sagittate, peltate connective; pollen granular; filaments free from the style. Carpels 2, apocarpous, united at the apex by a common style surmounted by the capitate stigma; ovules many, several-seriate, borne upon an axile, binate placenta. Nectaries 5, essentially separate or somewhat concrescent at the base. Follicles 2, apocarpous, terete and relatively slender in our species, dehiscing along the ventral suture, containing many dry, truncate, apically comose seeds.

Type species: *Trachelospermum jasminoides* (Lindl.) Lem. Jard. Fleur. **1**: *pl. 61.* 1851.

The genus *Trachelospermum* includes numerous species of southeastern Asia, among which is the type species. In the western hemisphere the genus is represented by a single species, *T. difforme* (Walt.) A. Gray (= *Echites difformis* Walt.). As has already been indicated more briefly (p. (19) *ante*), reasons for placing this species in the Asiatic genus *Trachelospermum* rather than in the tropical American *Secondatia* may be reduced to the consideration that the distribution of *E. difformis* in the southeastern United States has been found in numerous instances to be strongly correlated with southeastern Asiatic affinities not only in another genus of Apocynaceae (*Amsonia,* cf. Woodson, R. E., Jr., Ann. Mo. Bot. Gard. **15**: 388. 1928) but in certain other families of vascular plants as well.

Morphological reasons for assigning the species to *Trachelospermum* rather than to *Secondatia* are found in the fusiform stigma and solitary squamellae of the latter genus. The contrasting capitate or subcapitate stigma and geminate squamellae of *E. difformis,* however, are not characters which are maintained rigidly throughout the Asiatic representation of *Trachelospermum.* As may be inferred from the foregoing considerations, the whole problem boils down to our ignorance of adequate characters to distinguish *Secondatia* and *Trachelospermum* as genera. Should the suspected congenericity of the two be acted upon nomenclatorially, the former name should have to be preserved by reason of priority. Thus a more familiar name would be displaced by one much less generally known, and a fairly large number of new nomenclatorial combinations necessitated. Such radical changes are always deplorable unless activated by conclusive observations, which are yet lacking in the present instance. The preferred course in the situation at hand, then, would appear to be the rather arbitrary retention of both *Trachelospermum* and *Secondatia* for the present, and the support of Gray's disposition of *Echites difformis* Walt.:

1. **Trachelospermum difforme** (Walt.) A. Gray, Syn. Fl. N. Am. **2**: 85. 1878; Britton & Brown, Illustr. Fl. ed. 1. **3**: 4. *fig. 2899*. 1898; Robinson & Fernald in A. Gray, Man. ed. 7. 662. 1908.

Echites difformis Walt. Fl. Carol. 98. 1788.

Echites puberula Michx. Fl. Bor. Am. **1**: 120. 1803.

Tabernaemontana populifolia Poir. Dict. Suppl. **1**: 276. 1811; A. DC. in DC. Prodr. **8**: 374. 1844.

Echites salicifolia Raf. New Fl. N. Am. **4**: 59. 1836, not Willd.

Forsteronia difformis (Walt.) A. DC. loc. cit. 437. 1844.

Secondatia difformis (Walt.) Benth. in Benth. & Hook. Gen. Pl. **2**: 710. 1876; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 165. 1895.

Thyrsanthus populifolius (Poir.) Miers, Apoc. So. Am. 99. 1878.

Thyrsanthus difformis (Walt.) Miers, loc. cit. 1878.

Stems relatively slender, glabrous, or minutely and sparsely pilosulose when very young, rather inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, elliptic to obovate-elliptic, less frequently elliptic-linear to suborbicular, apex acuminate, occasionally very shortly and abruptly so, base acute to obtuse, occasionally rounded, 2.7–12.0 cm. long, 0.4–7.2 cm. broad, delicately membranaceous, above glabrous or essentially so, beneath softly puberulent to essentially glabrous; petioles 0.1–1.5 cm. long; stipular appendages interpetiolar, minute, flagelliform to narrowly denticulate, several; inflorescence thyrsiform, lateral, alternate, bearing numerous small, pale yellow flowers; peduncle sparsely pilosulose to essentially glabrous, ultimate branches determinate, minutely and sparsely puberulent-papillate to essentially glabrous; pedicels 0.4–0.7 cm. long, minutely puberulent-papillate to nearly glabrate, conspicuously accrescent in fruit; bracts narrowly lanceolate to linear, 0.1–0.5 cm. long, more or less foliaceous; calyx-lobes ovate-lanceolate, long-acuminate, 0.3–0.37 cm. long, only slightly foliaceous, minutely and rather sparsely pilosulose-barbellate at the tips, otherwise essentially glabrous, the squamellae usually geminate, occasionally accompanied by smaller, supernumerary individuals; corolla salverform or subinfundibuliform, the tube 0.55–0.65 cm. long, about 0.08–0.1 cm. in diameter at the base, slightly constricted at the insertion of the stamens, then somewhat inflated, about 0.2–0.3 cm. in diameter at the orifice, essentially glabrous without, minutely hirtellous within somewhat above the insertion of the stamens, the lobes obliquely obovate, shortly acuminate, 0.3–0.37 cm. long, somewhat spreading to reflexed, glabrous without, minutely and indistinctly papillate to essentially glabrous within; stamens inserted somewhat below midway within the corolla-tube, the filaments 0.1–0.12 cm. long, very minutely tomentulose, the anthers narrowly sagittate, acuminate, acutely auriculate, 0.32–0.45 cm. long, minutely papillate dorsally; ovary ovoid, about 0.7 cm. long, glabrous; stigma subcapitate, broadly oblongoid, 0.08–0.1 cm. long; style 0.25–0.3 cm. long, deciduous at the insertion to the ovary; nectaries compressed-ovoid, separate, much shorter than the ovary; follicles relatively slender, obscurely undulate-articulate or essentially continuous, tortuose to somewhat divaricate, frequently more or less falcate, acuminate, 15–23 cm. long, glabrous; seeds 0.7–1.0 cm. long, the pale yellowish-ashy coma 1.5–1.8 cm. long.

UNITED STATES: DELAWARE: moist thicket, borders of cedar swamp, near Collins Beach, July 6, 1874, *Commons s.n.* (FM, MBG, NY, US); New Castle City, on borders of a cedar swamp, Aug. 23, 1865, *Commons s.n.* (NY, US); VIRGINIA: in fruticetis pr. Portsmouth, June, 1840, *Rugel s.n.* (BB); Virginia Beach, July 3, 1892, *Britton Britton & Vail s.n.* (NY); NORTH CAROLINA: Burgaw, June, 1880, *Hyams s.n.* (MBG); "middle North Carolina," May 28, year lacking, *Ashe 2354* (NY, US); near Gaston, Northampton Co., June 15, 1895, *Ward s.n.* (US); Edenton, Chowan Co., July 29–30, 1898, *Kearney 1874* (US); SOUTH CAROLINA: Aiken, date lacking, *Ravenel s.n.* (FM); near Charleston, 1865, *Stewart s.n.* (FM); Bluffton, date lacking, *Mellichamp s.n.* (NY, US); GEORGIA: edge of Ogeechee River swamp, Burke Co., alt. 145 ft., June 5, 1901, *Harper 794* (MBG, NY, US); Floyd Co., date lacking, *Chapman s.n.* (MBG); Rome, date lacking, *Chapman s.n.* (US); vicinity of Louisville, date lacking, *Hopkins s.n.* (NY); FLORIDA: bank of Apalachicola River, near Chattahoochee, June 16, 1897, *Curtiss 5893* (FM, MBG, US); Iola, date lacking, *Chapman s.n.* (MBG); near Tallahassee, summer, year lacking, *Berg s.n.* (NY); ALABAMA: low wooded banks, Cullman, June, 1891, *Mohr s.n.* (MBG); along A. G. S. R. R., Valley Head, July, 1898, *Ruth 468* (MBG, NY, US); woods, near Attalla, Etowah Co., June 30, 1897, *Eggert s.n.* (MBG); near Tuscaloosa, date lacking, *Johnson s.n.* (NY); Calera, date lacking, *Everts s.n.* (NY); Pratt Mines, Aug. 16, 1879, *Mohr s.n.* (US); Busby's Ford, Walker Co., Sept. 10, 1879, *Mohr s.n.* (US); Gadsden, 1878, *Vasey s.n.* (FM, US); banks of Alabama River, Chestang's Bluff, Sept. 1, 1879, *Mohr s.n.* (US); Cedar Plains, swampy copses, May 21, 1891, *Mohr & Sudworth s.n.* (US); MISSISSIPPI: Centerville, Aug. 4, 1897, *Tracy 5468* (MBG, NY); Jackson, May 23, 1888, *Tracy s.n.* (NY); Taylorville, Aug. 23, 1903, *Tracy s.n.* (US); Brookhaven, April 25, 1882, *Flint s.n.* (US); field ditch, Forest, May 26, 1925, *Cook s.n.* (US); LOUISIANA: near New Orleans, date lacking, *Ingalls s.n.* (NY); same data, *Drummond s.n.* (Camb.); Atakapas, May, 1883, *Langlois s.n.* (FM); Natchitoches, June 11, 1915, *Palmer 7958* (MBG); East Baton Rouge Par., May 20, 1874, *Joor s.n.* (FM); TEXAS: Polk, Bowie Co., June 13, 1898, *Eggert s.n.* (MBG); near Houston, April, 1842, *Lindheimer s.n.* (MBG); Big Sandy, common in swamp, June 27, 1901, *Reverchon 2558* (MBG); climbing on small trees, Montgomery Co., July 18–21, 1909, *Dixon 491* (FM, NY); Harrisburg, July 14, 1876, *Joor s.n.* (US); ILLINOIS: low woods bordering swamps, Karnak, Pulaski Co., Sept. 23, 1919, *Palmer 16542* (MBG, US); INDIANA: frequent on the high bank of a slough in the "bottoms," about ¾ mi. southeast of Yankeetown, rare, Aug. 13, 1922, *Deam 37581* (NY); TENNESSEE: low woods, Haywood Co., June, 1893, *Bain 428* (NY); Covington, June, 1889, *Byars s.n.* (US); MISSOURI: border of Creve Coeur Lake, St. Louis Co., February, 1931, *Woodson s.n.* (MBG); swamps, Campbell, Sept. 7, 1910, *Bush 6238* (MBG, NY); in Sümpfen, Dunklin Co., July 27–Sept. 26, 1893, *Eggert s.n.* (MBG); swamps, Butler Co., Oct. 17, 1905, *Bush 3742* (MBG, NY, US); between Paragould [Ark.] and Kennett, July 27, 1893, *Eggert s.n.* (FM, MBG, NY, US); low wet woods, Neeleyville, Butler Co., Sept. 16, 1919, *Palmer 16460* (MBG, US); thickets, fence-rows, etc., Kennett, Dunklin Co., June 8, 1930, *Kellogg 15263* (MBG); ARKANSAS: low rocky banks of Ouachita River, near Hot Springs, Garland Co., Oct. 11, 1925, *Palmer 29164* (MBG); thickets along small rocky creek, near Hot Springs, Garland Co., May 9, 1925, *Palmer 27116* (MBG); low woods, Corning, Clay Co., June 24, 1914, *Palmer 6063* (MBG); low open ground, Arkadelphia, Clark Co., June 21, 1915, *Palmer 8089* (MBG); Little Rock, 1881, *Letterman s.n.* (MBG); Arkansas Post, Sept. 24, 1909, *Kellogg s.n.* (MBG); climbing on bushes, Judsonia, June 12, 1877, *Reynolds s.n.* (FM, US); swamps, Moark, Oct. 17, 1905, *Bush 3751* (MBG); Paragould, Sept. 26, 1893, *Eggert s.n.* (MBG); low woods, Greene Co., July 27, Sept. 26, 1893, *Eggert s.n.* (MBG, NY); along Bridge Creek, near McNab, Hempstead Co., Oct. 4, 1923, *Greenman 4316* (MBG); St. Francis Club (w. of Memphis), April 5, 1889, *Trelease s.n.* (MBG); wet sandy ground, Gum Springs, Clark Co., July 21, 1916, *Palmer 10537* (MBG); Conway, May 15, 1923, *Wheeler s.n.* (FM); common, wooded bottoms, Pike Co., Sept. 29, 1932, *Demaree 9392* (MBG); in sandstone rubble on exposed mountain slope, Arkansas National Forest, Sebastian Co., May 24, 1931, *Palmer 39314* (MBG); 4 mi. southeast of Prescott, July 7, 1912, *Hollister 46* (US); OKLAHOMA: at edge of a pond, Talihina, June 19, 1898, *Glatfelter s.n.* (MBG); Kiamichi River, LeFlore Co., June, 1927, *Ortenburger s.n.* (US).

The striking coextension of the ranges of *T. difforme* and *Taxodium distichum*, as symbolic of the characteristic flora of the ancient Cretaceous strand, also indicated, is illustrated in text-fig. 2. The most remarkable extension of the species at present recorded is from the banks of Creve Coeur Lake, St. Louis County, Missouri, where a single plant with several mature follicles containing viable seeds was found by the writer during February, 1931. Although in winter condition, the plant was proved correctly identified by the germination and subsequent growth of seedlings from the fruit. Creve Coeur Lake is one of the familiar "ox-bow" lakes of the Missouri River a few miles west of its junction with the Mississippi. Although repeated search has been made, particularly by local botanists of the vicinity of Saint Louis including the original finder, no further evidence of plants has as yet been found. This station is more than 125 miles north of the low-

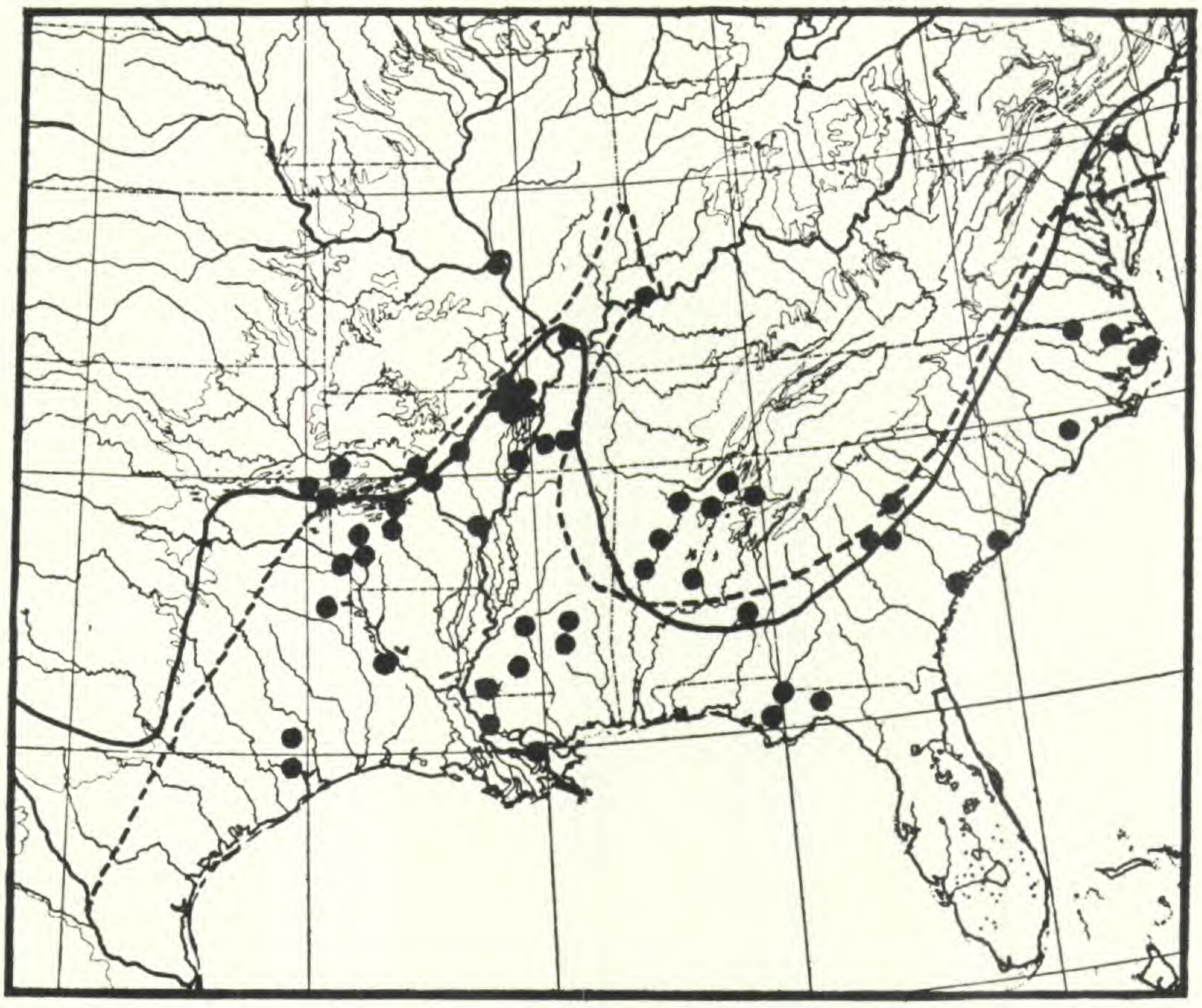

Fig. 2. Solid line: approximate shore-line of the Middle Late Cretaceous period in the southeastern United States (after Schuchert & Dunbar); broken line: approximate northern limit of *Taxodium distichum* (after Berry); dots: known distribution of *Trachelospermum difforme*. Explanation in the text.

land of Missouri south of the ancient Cretaceous shore-line of the Mississippi embayment (popularly known by the inhabitants of the district as the "Poplar Bluff" for the occurrence of *Liriodendron tulipifera*) where the species is common, together with *Taxodium distichum* and the associated southeastern Atlantic coastal plain flora. Additional interest in the isolated occurrence of *T. difforme* in the lower Missouri River Valley is found in persistent reports of logs of *Taxodium* washed from time to time by the unruly river from the bordering beds of clay and loess. Although the writer has never been so fortunate as to see actual specimens of such ancient wood, it is generally believed that the former distribution of *T. distichum* in North America was much wider than at present.

Although the flowers and inflorescence of *T. difforme* are rather uniform throughout the distribution of the species, vegetative characters are found to be variable. The leaves are variable in shape and size, and the presence, or relative abundance, of the foliar indument is manifestly inconstant. Particularly striking are occasional plants with very narrowly elliptic to almost linear foliage which are found toward the southwestern limits of the species. In this area, however, are also found plants bearing leaves which are among the broadest of the species. The outline and width of foliage also have been found inconstant upon single specimens. Consequently it has been considered inadvisable to erect varieties for the expression of such fluctuations of vegetative characters.

EXCLUDED SPECIES

Trachelospermum stans A. Gray, Proc. Am. Acad. **21**: 394. 1886 = **Mandevilla foliosa** (Muell.-Arg.) Hemsl. Biol. Centr.-Am. Bot. **2**: 316. 1882 (*Amblyanthera foliosa* Muell.-Arg. Linnaea **30**: 427. 1860).

VIII. MALOUETIA A. DC.

Malouetia A. DC. in DC. Prodr. **8**: 378. 1844; Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 89. 1860; Benth. & Hook. Gen. Pl. **2**: 708. 1876; Miers, Apoc. So. Am. 86. 1878; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 186. 1895.

Robbia A. DC. loc. cit. 444. 1844; Miers, loc. cit. 107. 1878; K. Sch. loc. cit. 187. 1895.

Lactescent shrubs or small trees. Stems ligneous, erect, terete, the branches dichotomous or opposite, rarely alternate. Leaves opposite, entire, penninerved, the upper surface eglandular, the lower surface bearing with more or less frequency a single lenticular or pustulate foveum or pit in the axils of the midrib and primary veins; nodes exstipulate or virtually so. Inflorescence terminal, occasionally lateral as well, umbellate, few- to several-flowered. Calyx 5-parted, the lobes essentially equal, cleft nearly to the receptacle, bearing within alternate, solitary, or rarely geminate, glandular squamellae. Corolla salverform, the tube relatively short in certain species, cylindrical to flask-form, exappendiculate within, the orifice conspicuously callose-thickened[1] in certain species, the limb actinomorphic, 5-parted, dextrorsely convolute. Stamens 5, the anthers almost completely exserted to wholly included in some species, connivent and agglutinated to the stigma, consisting of 2 parallel, basally protuberant sporangia borne ventrally near the apex of an enlarged, sagittate, peltate connective; pollen granular; filaments free. Carpels 2, apocarpous, united at the apex by a common stylar shaft surmounted by the fusiform-subcapitate stigma; ovules numerous, 2–4-seriate, borne upon an axile, binate placenta. Nectaries 5, separate or more or less concrescent. Follicles 2, occasionally solitary by abortion, apocarpous, narrowly terete to broadly fusiform, usually more or less divaricate or falcate, dehiscing along the ventral suture; containing numerous dry, ecomose, glabrous or generally pubescent seeds.

Type species: *Malouetia Tamaquarina* (Aubl.) A. DC. loc. cit. 378. 1844.

The question relative to the congenericity of *Malouetia* and *Robbia* is scarcely nearer solution than in 1860 when the two were combined by Mueller, whose position was later endorsed by Bentham. Miers and Schumann maintained the generic status of *Robbia;* while more recently the broader interpretation of the plexus has been reaffirmed by Markgraf (in Pulle, Fl. Surinam **4**: 56. 1932).

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[1] Cf. p. (291), *et seq.*

The distinction of the two genera evidently rests solely upon the character of the seeds, whether glabrous, as in typical *Malouetia,* or pubescent, as in the species referred to *Robbia* by de Candolle. No other distinguishing characters have been advanced by any competent student of the genus. Although such a character as that of the seeds is doubtless of genuine biological significance, it can scarcely be interpreted as more so than, for example, the absence of latex in *Asclepias tuberosa,* which would properly be frowned upon as the basis of a generic segregation largely on the basis of practice. Similarly in the instance of *Robbia* and *Malouetia,* fruit is so rare in herbarium collections that separation of the genera upon that single character would prove extremely difficult in the absence of additional criteria. For a number of species, fruit is unknown at the present writing.

Intergradation of the seminal indument of *Robbia* further weakens the claim of that character as of generic, or even subgeneric or sectional value. The seeds of *Malouetia Tamaquarina* (Aubl.) A. DC. are absolutely glabrous: those of *M. furfuracea* Muell.-Arg. are very sparsely villous. Yet these two species are scarcely separable in flowering material, and are indigenous to an almost identical area. The seeds of *M. cestroides* (Nees) Muell.-Arg., not distantly related to the preceding, are densely lanate-villous.

In view of our imperfect understanding of the group, the most practical policy would appear to be the inclusion of *Robbia* within *Malouetia.*

KEY TO THE SECTIONS

A. Anthers conspicuously exserted (except in *M. Mexiae* and *M. cestroides*), inserted near the orifice of the corolla-tube.........Sect. 1. TAMAQUARINAE

AA. Anthers included, or essentially so, inserted about midway, or deeper, within the corolla-tube.................................Sect. 2. GRACILES

Sect. 1. TAMAQUARINAE Woodson. Corolla-tube cylindrical to broadly flask-form, gradually narrowing toward the insertion of the stamens; anthers ovate to elliptic, conspicuously exserted (essentially included, or barely exserted in *M. Mexiae* and *M. cestroides*), inserted near the orifice of the corolla-tube. *Spp. 1–15.*

KEY TO THE SPECIES

a. Calyx-lobes delicate and foliaceous in texture, not closely imbricated at anthesis, spreading; corolla-tube flask-form, conspicuously inflated below the middle.
  b. Anthers conspicuously exserted; corolline faucal tube 0.05–0.075 cm. long.
    c. Corolla without a callose faucal annulus;* plants of the lower Amazon Valley (Para) .... *1. M. flavescens*
    cc. Corolla with a definite faucal annulus.
      d. Corolla-tube 0.8–1.3 cm. long; calyx-lobes lanceolate to linear-lanceolate, 0.25–0.5 cm. long.
        e. Corolla-tube 0.8–1.0 cm. long, the lobes 0.9–1.2 cm. long; faucal annulus relatively indefinite, consisting of numerous minute, callose protuberances; plants of the Antilles (St. Vincent, Cuba?) .... *2. M. cubana*
        ee. Corolla-tube 1.1–1.3 cm. long, the lobes 1.2–1.6 cm. long; faucal annulus conspicuous, 5-lobed; plants of British Guiana .... *3. M. Schomburgki*
      dd. Corolla-tube 0.6–0.7 cm. long; calyx-lobes ovate to ovate-lanceolate, 0.15–0.25 cm. long; plants of the lower Amazon Valley (Para) .... *4. M. lata*
  bb. Anther-tips barely surpassing or attaining the corolline orifice; faucal tube 0.2–0.25 cm. long; plants of the Amazon Valley (Para and Amazonas) .... *5. M. Mexiae*
aa. Calyx-lobes relatively fleshy and coriaceous in texture, closely imbricated at anthesis; corolla-tube cylindrical, or only somewhat flask-form in certain species.
  b. Corolla relatively delicate in texture, the tube 0.4–0.9 cm. long.
    c. Leaves wholly glabrous.
      d. Anthers barely included, or the tips barely exserted...... *6. M. cestroides*
      dd. Anthers conspicuously exserted.
        e. Leaves membranaceous, conspicuously foveate in the axils of the midrib; plants of southeastern Brazil (Rio de Janeiro, Minas Geraes, São Paulo) .... *7. M. arborea*
        ee. Leaves subcoriaceous, inconspicuously and rarely foveate in the axils of the midrib; plants of northern Brazil (Para, Amazonas) and adjacent Colombia .... *8. M. Duckei*
    cc. Leaves softly puberulent beneath .... *9. M. pubescens*
  bb. Corolla relatively fleshy in texture, the tube 0.9–1.5 cm. long.
    c. Leaves wholly glabrous.
      d. Leaves definitely petiolate.
        e. Corolla-lobes puberulent within, at least toward the base.

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* Cf. p. (291), *et seq.*

f. Calyx-lobes 0.2–0.3 cm. long, ⅕–¼ (rarely ⅓) as long as the corolla-tube, obtuse, occasionally broadly acute; seeds glabrous .... *10. M. Tamaquarina*

ff. Calyx-lobes 0.3–0.5 cm. long, ⅓–½ as long as the corolla-tube, acute to acuminate; seeds sparsely villous...... *11. M. furfuracea*

ee. Corolla-lobes about uniformly papillate to glabrate within and without.

f. Leaves oblong-oblanceolate, obtuse or rounded; corolla-tube 0.9 cm. long.................................. *12. M. glandulifera*

ff. Leaves ovate to lance-elliptic, acutely acuminate; corolla-tube 1.2–1.5 cm. long.............................. *13. M. peruviana*

dd. Leaves sessile or subsessile, and more or less amplexicaul.......... .... *14. M. amplexicaulis*

cc. Leaves softly and minutely puberulent beneath............. *15. M. Killipii*

1. **Malouetia flavescens** Muell.-Arg. in Mart. Fl. Bras. 6^1: 95. 1860.

Small shrubs (fide Ducke); stems relatively slender, glabrous, reddish-brown, very inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-elliptic, subcaudate-acuminate, base obtuse, 7–11 cm. long, 2.5–4.5 cm. broad, membranaceous, glabrous throughout, light olivaceous in desiccation, somewhat subnitidulous above, opaque beneath, infrequently and obscurely foveate in the axils of the midrib; petioles 0.1–0.3 cm. long, glabrous; umbels terminal, few-flowered; peduncle 0.1–0.3 cm. long, glabrous; pedicels 1.8–2.0 cm. long, somewhat accrescent in fruit, glabrous; calyx-lobes lanceolate, acuminate, spreading at anthesis, not closely imbricated, 0.3–0.35 cm. long, rather delicately foliaceous, puberulent-papillate within, minutely papillate without; corolla broadly flask-form, greenish, the tube 1.0–1.1 cm. long, about 0.15 cm. in diameter at the base, dilated to about 0.3 cm. in diameter below the middle, faucal tube 0.075 cm. long, about 0.175 cm. in diameter at the orifice, indefinitely papillate to essentially glabrate without, minutely puberulent generally within, the lobes obliquely oblong-lanceolate, long-acuminate, 1.1–1.2 cm. long, about 0.25 cm. broad, sharply reflexed, the tips usually more or less turbinate, minutely papillate without, minutely puberulent toward the base within; anthers conspicuously exserted, ovate-elliptic, 0.3–0.325 cm. long, minutely puberulent dorsally; ovary about 0.1 cm. long, minutely puberulent; stigma 0.15 cm. long; nectaries less than half equalling the ovary; follicles terete, 18–20 cm. long, about 0.4 cm. in diameter, falcate, glabrous; seeds 3–4 cm. long, 0.2–0.3 cm. in diameter, glabrous.

BRAZIL: PARA: ad cataractam infimam loco Maria Luiza, silva, Rio Tapajoz, Sept. 27, 1922, *Ducke 11394* (B, S, US).

The type specimen of this species (*Hoffmannsegg s.n.* in herb. Willdenow, fide Muell.-Arg.) has not been available for examination. However, the specimen cited agrees so well with the satisfyingly complete original description that its relegation to *M. flavescens* appears to be well substantiated.

2. **Malouetia cubana** A. DC. in DC. Prodr. **8**: 379. 1844; Miers, Apoc. So. Am. 92. 1878.

Malouetia retroflexa Muell.-Arg. Linnaea **30**: 408. 1860.

Stems relatively slender, glabrous, reddish-brown, inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-elliptic, apex shortly and obtusely subcaudate-acuminate, base obtuse to broadly acute, 5–11 cm. long, 1.5–4.5 cm. broad, membranaceous, glabrous throughout, olivaceous in desiccation, somewhat subnitidulous above, opaque beneath, minutely foveate in the axils of the midrib; petioles 0.15–0.5 cm. long; umbels terminal, few-flowered; peduncle 0.2–0.4 cm. long; pedicels 2.0–2.3 cm. long, glabrous; calyx-lobes lanceolate to ovate-lanceolate, acuminate, spreading at anthesis, not closely imbricated, 0.3–0.45 cm. long, rather delicately foliaceous, glabrous without, minutely and sparsely puberulent-papillate toward the tips within; corolla broadly flask-form, greenish-white (?), the tube 0.8–1.0 cm. long, about 0.1–0.15 cm. in diameter at the base, dilated to about 0.2–0.25 cm. below the middle, faucal tube 0.05 cm. long, orifice about 0.15 cm. in diameter, faucal annulus relatively indefinite, consisting of numerous minute, callose protuberances, glabrous without, very minutely puberulent within, the lobes obliquely lanceolate to ovate-lanceolate, acuminate, 0.9–1.2 cm. long, about 0.2 cm. broad, sharply reflexed, the tips usually more or less turbinate, minutely papillate without, minutely puberulent toward the base within; anthers conspicuously exserted, ovate-elliptic, 0.3–0.325 cm. long, minutely puberulent dorsally; ovary about 0.125 cm. long, minutely puberulent; stigma 0.125–0.15 cm. long; nectaries about ⅓ equalling the ovary; follicles unknown.

ST. VINCENT: exact locality lacking, 1822, *Guilding s.n.* (K, MBG, photograph and analytical drawings).

I am strongly inclined to the opinion expressed by Miers (loc. cit. 1878) that the original descriptions of *M. cubana* and *M. retroflexa* can scarcely be interpreted as applying to distinct species. The type specimen of the former, *de la Ossa s.n.*, should presumably be deposited in the herbarium of de Candolle, but it was not found during my examination of the collection in 1930. At any rate, the species has evidently not been collected in Cuba since the discovery of the type. Ambiguity likewise surrounds the present status of *M. retroflexa* in St. Vincent. Beside the type collection, made over a hundred years ago, a specimen with only the data "*Echites guianensis;* West-Indien," has been found in the herbarium at Vienna, and another, presumably a duplicate of the type, at Berlin with the notation "St. Vincent; Lindley misit 1827."

3. **Malouetia Schomburgki** Muell.-Arg. Linnaea **30**: 409. 1860; Miers, Apoc. So. Am. 88. 1878.

Shrubs or small trees, 1.8–3.0 m. tall (fide de la Cruz); stems relatively slender, glabrous, reddish-brown, inconspicuously lenticellate when fully mature; leaves opposite, petiolate, oblong- to ovate-elliptic, apex obtusely subcaudate-acuminate, base obtuse to broadly acute, 4.5–13.0 cm. long, 2.0–5.5 cm. broad, firmly membranaceous to somewhat subcoriaceous, glabrous throughout, light olivaceous in desiccation, nitidulous above, opaque, minutely foveate in the axils of the midrib beneath; petioles 0.2–0.5 cm. long, glabrous; umbels terminal, bearing several white (or brownish ?) flowers; peduncle 0.2–0.5 cm. long; pedicels 0.15–0.3 cm. long, glabrous; calyx-lobes lanceolate to linear-lanceolate, acuminate, 0.25–0.5 cm. long, glabrous to very minutely papillate without, minutely puberulent-papillate toward the tips within, rather delicately foliaceous, spreading at anthesis, not closely imbricated; corolla broadly flask-form, the tube 1.1–1.3 cm. long, about 0.1–0.125 cm. in diameter at the base, dilated to about 0.25–0.3 cm. below the middle, faucal tube 0.05–0.075 cm. long, about 0.1–0.15 cm. in diameter at the orifice, faucal annulus conspicuous, 5-lobed, glabrous without, minutely puberulent within, the lobes obliquely oblong-lanceolate, acuminate, 1.2–1.6 cm. long, 0.175–0.25 cm. broad, sharply reflexed, the tips usually more or less turbinate, minutely papillate or puberulent-papillate without, puberulent toward the base within; anthers conspicuously exserted, ovate-elliptic, 0.25–0.3 cm. long, minutely puberulent dorsally; ovary about 0.1 cm. long, minutely puberulent; stigma 0.1–0.125 cm. long; nectaries ⅓–½ equalling the ovary; follicles terete, 16–36 cm. long, 0.3–0.4 cm. in diameter, falcate, glabrous; seeds 2.5–4.0 cm. long, glabrous.

BRITISH GUIANA: Ufer der fl. Pomeroon, Aug., 1843, *Schomburgk 1386* (B, SYNTYPE, MBG, photograph); Waini River, Northwest District, Sept. 13, 1921, *Cruz 1116* (G, NY, US); Cart Market, Moruka River, Pomeroon District, Sept. 20, 1921, *Cruz 1157* (NY, US); Anabisi River, Northwest District, Febr. 15, 1922, *Cruz 1360* (FM, NY, US); upper Rupununi River, near Dadanawa, June 3, 1922, *Cruz 1476* (MBG, NY, US); vicinity of Bartica, Essequibo River, Sept. 3–12, 1922, *Cruz 1874* (FM, G, MBG, NY, US); Kabakaburi, Pomeroon District, Febr. 10–15, 1923, *Cruz 3242* (FM, MBG, NY, US); Wanama River, Northwest District, May 10–23, 1923, *Cruz 3935* (MBG, NY, US); Kamakusa, upper Mazaruni River, July 11–12, 1923, *Cruz 4232* (MBG, NY, US); data incomplete, *Schomburgk 830* (V, PARATYPE).

4. **Malouetia lata** Mgf. Notizblatt **10**: 1037. 1930.

Shrubs (fide Ducke); stems relatively stout, glabrous, reddish-brown, inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, broadly oblong- to ovate-elliptic, apex obtusely subcaudate-acuminate, base obtuse to rounded, 5–12 cm. long, 3–7 cm. broad, rather delicately membranaceous, glabrous throughout, olivaceous in desiccation, slightly nitidulous above, opaque, very inconspicuously foveate in the axils of the midrib beneath; petioles 0.2–0.5 cm. long, glabrous; umbels terminal, bearing relatively few, greenish-white flowers; peduncle 0.1–0.3 cm. long; pedicels 0.7–0.8 cm. long, glabrous; calyx-lobes ovate to ovate-lanceolate, acuminate, 0.15–0.25 cm. long, spreading at anthesis, not closely imbricated, rather delicately foliaceous in texture, glabrous without, minutely and rather sparsely puberulent-papillate at the tips within; corolla broadly flask-form, the tube 0.6–0.7 cm. long, about 0.1 cm. in diameter at the base, dilated to 0.25–0.3 cm. below the middle, faucal tube 0.05 cm. long, about 0.125 cm. in diameter at the orifice, faucal annulus conspicuous, 5-lobed, without minutely papillate below, otherwise glabrous, within minutely puberulent to puberulent-papillate, the lobes obliquely oblong-elliptic, acuminate, 0.7–0.8 cm. long, sharply reflexed, minutely papillate without, minutely puberulent toward the base within; anthers conspicuously exserted, ovate-elliptic 0.25 cm. long, minutely puberulent dorsally; ovary about 0.1 cm. long, minutely puberulent; stigma 0.1 cm. long; nectaries about ½ equalling the ovary; follicles terete, 40–45 cm. long, 0.4–0.5 cm. in diameter, falcate, glabrous; seeds 0.35–0.4 cm. long, about 0.2 cm. in diameter, glabrous.

BRAZIL: PARA: Parana de Juruty Velho, silva ab Amazonium fluvio periodice inundata, Febr. 26, 1926, *Ducke 21591* (B, TYPE, S, US, MBG, photograph and analytical drawings); Cacaval Imperial prope Obidos, silva ab Amazonium fluvio periodice inundata, Sept. 12, 1910, *Ducke 21784* (B); AMAZONAS: Rio Antimary (Purus), silva paludosa, April 1, 1904, *Huber 21764* (B).

5. **Malouetia Mexiae** Woodson, spec. nov.

Arbusculae vel frutices; ramulis glaberrimis cortice atrobrunneis maturitate inconspicue lenticellatis; foliis oppositis breviter petiolatis oblongo-ellipticis apice obtuse subcaudato-acuminatis basi obtusis 6–12 cm. longis 0.15–0.4 cm. latis coriaceis glaberrimis supra subnitidulis subtus opacis in axillis nervi medii inconspicue foveatis; petiolis 0.2–0.4 cm. longis glabris; umbellis terminalibus flores 4–10 pallide viridulas gerentibus; pedunculo 0.2–0.5 cm. longo; pedicellis 1.5–2.5 cm. longis glaberrimis; calycis laciniis ovatis vel ovato-lanceolatis acuminatis 0.25–0.35 cm. longis tenuiter foliaceis ex apice patulis haud imbricatis extus minute papillatis intus minute puberulis; corollae ampulliformis tubo 0.9–1.2 cm. longo basi ca. 0.1–0.15 cm. diametro metiente deinde sub medio usque 0.275–0.35 cm. dilatato faucibus tubularibus 0.2–0.25 cm. longis ostio ca. 0.15 cm. diametro metiente conspicue calloso-annulato extus glabro intus prope insertionem staminum puberulo-papillato lobis anguste et oblique elliptico-oblanceolatis acuminatis 0.9–

1.4 cm. longis 0.25–0.3 cm. latis patentibus extus papillatis intus prope basem puberulis; antheris inclusis vel paululo exsertis ovato-ellipticis 0.25–0.3 cm. longis dorso minute puberulis puberulo-papillatisve; ovario ca. 0.1 cm. longo minutissime puberulo; stigmate 0.1 cm. longo; nectariis ovario ca. dimidio brevioribus; folliculis ignotis.

Shrubs or small trees; stems glabrous, reddish-brown, inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-elliptic, apex obtusely subcaudate-acuminate, base obtuse, 6–12 cm. long, 0.15–0.4 cm. broad, coriaceous, glabrous throughout, above subnitidulous, beneath opaque, inconspicuously foveate in the axils of the midrib; petioles 0.2–0.4 cm. long; umbels terminal, bearing 4–10 pale greenish flowers; peduncle 0.2–0.5 cm. long; pedicels 1.5–2.5 cm. long, glabrous; calyx-lobes ovate to ovate-lanceolate, acuminate, 0.25–0.3 cm. long, delicately foliaceous, spreading at anthesis, not closely imbricated, minutely papillate without, within minutely puberulent; corolla-tube flask-form, 0.9–1.2 cm. long, about 0.1–0.15 cm. in diameter at the base, dilated to 0.275–0.35 cm., faucal tube 0.2–0.25 cm. long, about 0.15 cm. in diameter at the orifice, faucal annulus conspicuous, 5-lobed, the lobes narrowly and obliquely elliptic-oblanceolate, acuminate, 0.9–1.4 cm. long, 0.25–0.3 cm. broad, sharply reflexed, without minutely papillate, puberulent toward the base within; anthers ovate-elliptic, 0.25–0.3 cm. long, included, or the tips barely exserted, minutely puberulent to puberulent-papillate dorsally; ovary about 0.1 cm. long, very minutely puberulent; stigma 0.1 cm. long; nectaries about ½ equalling the ovary; follicles unknown.

BRAZIL: PARA: Thomé Assu, Districto Acara, Rio Acara, overflow bank in dense shade, July 28, 1931, *Mexia 5994* (MBG, TYPE); inter Mosquiero et Carananduba, in ripis inundatis fluvii Para, May 13, 1923, *Ducke 17465* (B); ad ripas inundatas fluminis Jaburuzinho, regione Breves, aestuarii amazonici, July 12, 1923, *Ducke 17466* (B); Cameta, silvula secundaria, Sept. 13, 1903, *Siquiera 21771* (B); AMAZONAS: Rio Negro infer., loco Terra Preta, silva paludosa, Dec. 31, 1923, *Kuhlmann 21868* (B).

Sharply differentiated from its relatives of the *Schomburgki* plexus by the included or barely exserted anthers, a position caused by the extension of the faucal tube of the corolla. The texture of the leaves, in addition, is more heavy than that of its related congeners. *Siquiera 21771* and *Kuhlmann 21868* are placed within this species somewhat doubtfully because of a lack of fully expanded floral buds.

6. **Malouetia cestroides** (Nees) Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 94. *pl. 29. fig. 2.* 1860.

Tabernaemontana cestroides Nees, ex Mart. Nov. Act. Nat. Cur. **11**: 83. 1823.

Robbia cestroides (Nees) A. DC. in DC. Prodr. **8**: 445. 1844; Deles. Icon. **5**: *pl. 52.* 1846; Miers, Apoc. So. Am. 107. 1878; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 187. 1895.

Shrubs or small trees; stems relatively stout, glabrous, reddish-brown, inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong- to ovate-elliptic, apex obtusely acuminate, base obtuse to broadly acute, 6–12 cm. long, 2.0–4.5 cm. broad, firmly membranaceous, glabrous throughout, above somewhat nitidulous, beneath opaque, minutely foveate in the axils of the midrib; petioles 0.2–0.6 cm. long; umbels terminal, relatively few-flowered; peduncle 0.2–0.4 cm. long; pedicels 0.8–1.0 cm. long, glabrous; calyx-lobes ovate, obtuse to rounded, occasionally broadly acute, 0.1–0.125 cm. long, relatively thick in texture, closely imbricated at anthesis, glabrous without, papillate toward the tips within; corolla salverform, only slightly inflated toward the base, the tube 0.75–0.8 cm. long, about 0.075–0.1 cm. in diameter at the base, faucal tube 0.125–0.15 cm. long, about 0.1 cm. in diameter at the orifice, faucal annulus conspicuous, 5-lobed, glabrous without, minutely puberulent above within, the lobes obliquely elliptic-lanceolate, acuminate, 0.6–0.8 cm. long, reflexed, papillate without, minutely puberulent toward the base within; anthers barely included or the tips barely exserted, ovate-elliptic, 0.2 cm. long, very minutely pilosulose dorsally; ovary about 0.15 cm. long, minutely puberulent; stigma 0.1 cm. long; nectaries about ½ equalling the ovary; follicles terete, 11–12 cm. long, about 0.5 cm. in diameter, somewhat divaricate, glabrous; seeds 2.5–3.0 cm. long, densely lanate-villous.

BRAZIL: BAHIA: Vittoria, date lacking, *Sello s.n.* (B); Nazareth, date lacking, *Sello s.n.* (B); data incomplete, *Blanchet 1738* (MBG); *Blanchet 1578* (MP); RIO DE JANEIRO: Gavea, Jan. 3, 1872, *Glaziou 5934* (B, NY); MINAS GERAES: data incomplete, Aug.–April, 1840, *Claussen s.n.* (Camb.); DATA INCOMPLETE: *Martius 105* (Bx, TYPE, V, MBG, photograph); *Riedel s.n.* (B, V); *Regel s.n.* (Camb.).

7. **Malouetia arborea** (Vell.) Miers, Apoc. So. Am. 89. 1878.

Echites arborea Vell. Fl. Flum. 114. 1830; Icon. **3**: *pl. 47.* 1827.

Tabernaemontana laeta Mart. according to A. DC. in DC. Prodr. **8**: 364. 1844, as to synonymy, in part.

Malouetia Tamaquarina A. DC. γ. *Brasiliensis* A. DC. loc. cit. 379. 1844.

Malouetia lanceolata Muell.-Arg. in Mart. Fl. Bras. **6^1**: 93. *pl. 29. fig. 3.* 1860; Miers, loc. cit. 88. 1878; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4^2**: 187. 1895.

Malouetia Martii Muell.-Arg. loc. cit. 94. *pl. 29.* 1860; Miers, loc. cit. 90. 1878.

Secondatia ? arborea (Vell.) Muell.-Arg. loc. cit. 110. 1860.

Robbia gossipina Miers, loc. cit. 108. *pl. 12. fig. B.* 1878.

Small trees (12 m. tall, fide Kuhlmann); stems relatively stout, glabrous, reddish-brown, rather inconspicuously lenticellate when fully mature; leaves opposite, petiolate, oblong-elliptic, apex obtusely subcaudate-acuminate, base obtuse to broadly acute, 4–12 cm. long, 1.3–4.0 cm. broad, membranaceous, glabrous throughout, above somewhat subnitidulous, beneath opaque, conspicuously foveate in the axils of the midrib; petioles 0.3–0.5 cm. long; umbels terminal, bearing several small, white flowers; peduncle 0.2–0.4 cm. long; pedicels 0.9–1.0 cm. long, glabrous; calyx-lobes ovate, acute to obtuse, 0.15–0.2 cm. long, relatively thick in texture, closely imbricated at anthesis, without glabrous to minutely papillate, within papillate at the tips; corolla salverform, only slightly inflated at the base, the tube 0.7–0.8 cm. long, about 0.1 cm. in diameter at the base, faucal tube 0.05–0.1 cm. long, about 0.1–0.125 cm. in diameter at the orifice, faucal annulus conspicuous, 5-lobed, without glabrous or rarely very minutely papillate, within very sparsely and minutely puberulent above, the lobes obliquely elliptic-lanceolate, acuminate, 0.8–0.95 cm. long, 0.25–0.3 cm. broad, reflexed, without minutely papillate, within minutely puberulent toward the base; anthers conspicuously exserted, ovate-elliptic, 0.2 cm. long, minutely puberulent dorsally; ovary 0.1 cm. long, minutely puberulent; stigma 0.08–0.1 cm. long; nectaries about ½ equalling the ovary; follicles terete, 9–14 cm. long, 0.7–0.8 cm. in diameter, divaricate, glabrous; seeds 3.5–4.0 cm. long, densely lanate-villous.

BRAZIL: RIO DE JANEIRO: S. Luiz, Aug. 9, 1867, *Glaziou 1989* (MP); Gavea, Jan. 3, 1872, *Glaziou 5934* (MP); Fazenda de Sta. Cruz, Aug. 8, 1877, *Glaziou 9511* (B, MP); Carcadura, Dec. 23, 1869, *Glaziou 4077* (B, MP); ad urbem in silvis Chacara do Fonseca, Jan. 3, 1922, *Occhioni 4459* (B, MP); Itatiaia, Dec., 1918, *Porto 8671* (B); ad urbem in loco Sta. Theresa, silva secundaria, Dec. 15, 1925, *Kuhlmann 21877* (B); data incomplete, *Weddell s.n.* (MP); *Schott s.n.* (V); *Mikan s.n.* (V); *Gardner 5547* (B, Camb., MP, V); MINAS GERAES: Ilheos, date lacking, *Martius 966* (B, M, MBG, NY, V); Organ Mts., Jan., 1838, *Miers 4027* (US); SÃO PAULO: in campis editoribus prope S. Paulo civitatem, Dec.–Jan., year lacking, *Martius 324* (M); DATA INCOMPLETE: *Riedel s.n.* (B, MP, NY); *McRae s.n.* (Camb.).

That Miers was correct in interpreting *Echites arborea* Vell. as a member of the genus *Malouetia* must be agreed after an examination of the plate and text by any one familiar with the characters of the group. Vellozo's plate *(pl. 47)* not only indicates the foliar foveae, so pronounced in *M. lanceolata* and *M. Martii,* the type specimens of which appear clearly conspecific, but those extremely characteristic structures of the leaves are specifically described as "poris in divisione nervorum ad costam," which could possibly apply only to species of *Malouetia* (or the liana *Forsteronia)* in the American flora. The general habit, relative size of the flowers, exserted anthers, and distribution (Mendanha, D. F.) completely clarify the natural affinities of this species. Miers also called attention to the erroneous inclusion of a comose seed in Vellozo's plate, possibly explaining Mueller's relegation of the species to *Secondatia.*

8. **Malouetia Duckei** Mgf. Notizblatt **9**: 962. 1926.

Trees (20 m. tall, fide Ducke); stems relatively stout, glabrous, reddish-brown, inconspicuously lenticellate when fully mature; leaves opposite, petiolate, oblong-elliptic, apex shortly and obtusely acuminate, base obtuse to broadly acute, 6–13 cm. long, 1.5–5.5 cm. broad, subcoriaceous, glabrous throughout, nitidulous above, beneath opaque, rarely and very inconspicuously foveate in the axils of the midrib; petioles 0.3–0.6 cm. long, glabrous; umbels terminal, bearing relatively numerous greenish-white flowers; peduncle 0.2–0.4 cm. long; pedicels 0.3–0.5 cm. long, minutely papillate to puberulent-papillate; calyx-lobes ovate, acute, 0.15–0.2 cm. long, closely imbricated at anthesis, papillate within and without; corolla salverform, only slightly broadening toward the base, 0.75–0.9 cm. long, about 0.1 cm. in diameter at the base, faucal tube 0.1 cm. long, about 0.15 cm. in diameter at the orifice, faucal annulus relatively conspicuous, very minutely puberulent or puberulent-papillate without, papillate within, the lobes obliquely oblong-elliptic, acute to acuminate, 0.7–0.8 cm. long, 0.25–0.3 cm. broad, reflexed, papillate to puberulent-papillate within, particularly toward the base, minutely papillate without; anthers conspicuously exserted, ovate-elliptic, 0.25 cm. long, very minutely and sparsely pilosulose to puberulent-papillate dorsally; ovary 0.1 cm. long, puberulent-papillate; stigma 0.125–0.15 cm. long; nectaries ½–⅔ equalling the ovary; follicles unknown.

COLOMBIA: CAQUETA: Rio Caqueta, super cataractas Cupaty, silva non inundabilis, Nov. 18, 1912, *Ducke 21822* (B, US).

BRAZIL: PARA: Itaituba, Rio Tapajoz, silva non inundata, Aug. 26, 1923, *Ducke 17464* (B, TYPE, S, US, MBG, photograph and analytical drawings); Faro, silva non inundabilis, Aug. 26, 1907, *Ducke 21625* (B, US); AMAZONAS: Manãos, silva non inundabili ultra locum Flores, Aug. 10, 1932, *Ducke 23952* (B).

The specimen from Amazonian Colombia is placed with this species rather reluctantly because of the smaller foliage leaves, which are much more conspicuously foveate beneath than among the typical specimens from lower downstream. It is hoped that the discovery of fruit may enable a sharper distinction between this species and the preceding which it closely resembles.

9. **Malouetia pubescens** Mgf. Notizblatt **9**: 88. 1924.

Shrubs or small trees (3–8 m. tall, fide Ule); stems relatively stout, very minutely puberulent when young, soon becoming glabrate, dark reddish-brown, rather inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-elliptic, apex obtusely acuminate, base obtuse, 5–10 cm. long, 1.5–4.0 cm. broad, firmly membranaceous, above somewhat nitidulous, beneath finely and densely puberulent; petioles 0.3–0.4 cm. long, minutely puberulent; umbels terminal, bearing relatively few small, white flowers; peduncle 0.2–0.3 cm. long; pedicels 0.4–0.5 cm. long, minutely puberulent; calyx-lobes ovate, acute, 0.15–0.17 cm. long, minutely puberulent; corolla salverform, only somewhat swollen toward the base, the tube 0.4–0.45 cm. long, about 0.125 cm. in diameter at the base, faucal tube 0.075 cm. long, about 0.1 cm. in diameter at the orifice, glabrous without, or essentially so, within minutely puberulent-papillate above, the lobes obliquely ovate-oblong, obtuse or broadly acute, 0.55–0.6 cm. long, reflexed, papillate without, minutely puberulent within, particularly toward the base; anthers conspicuously exserted, ovate-elliptic, 0.175 cm. long, minutely pilosulose dorsally; ovary 0.1 cm. long, minutely puberulent; stigma 0.05 cm. long; nectaries about equalling the ovary; follicles unknown.

BRAZIL: AMAZONAS: in Campwald bei S. Marcos, Rio Branco, Dec., 1908, *Ule 7827* (B, TYPE, US, MBG, photograph and analytical drawings).

A peculiar and characteristic species whose association with the *cestroides-arborea* complex must be confirmed by fruiting specimens.

10. **Malouetia Tamaquarina** (Aubl.) A. DC. in DC. Prodr. **8**: 378. 1844; Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 92. *pl. 26. fig. 2.* 1860; Miers, Apoc. So. Am. 87. 1878; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 187. 1895.

Cameraria Tamaquarina Aubl. Hist. Pl. Gui. Fr. **1**: 260; **3**: *pl. 102.* 1775.

Cameraria Guyanensis Aubl. loc. cit. 262. 1775.

Cameraria lutea Lam. Encycl. **1**: 573. 1783.

Tabernaemontana odorata Vahl, Eclog. **2**: 22. 1798.

Malouetia Tamaquarina A. DC. β. *minor* A. DC. loc. cit. 379. 1844.

Malouetia odorata (Vahl) A. DC. loc. cit. 1844; Miers, Apoc. So. Am. 87. 1878 (where erroneously attributed to himself).

Malouetia obtusiloba A. DC. loc. cit. 1844; Miers, loc. cit. 88. 1878 (where erroneously cited as *obtusifolia*).

Malouetia albiflora Miq. Stirp. Surinam. Sel. 161. 1851.

Malouetia Tamaquarina A. DC. β. *brasiliensis* Muell.-Arg. loc. cit. 1860, not A. DC., in part as to specimens cited.

Malouetia Tamaquarina A. DC. γ. *lancifolia* Muell.-Arg. loc. cit. 1860.

Malouetia Guianensis (Aubl.) Miers, loc. cit. 87. 1878.

Malouetia Tarumensis Benth. ex Miers, loc. cit. 1878, sphalm.

Shrubs and small trees (3–10 m. tall, fide de la Cruz and Monteiro da Costa); stems relatively stout, glabrous, inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, narrowly oblong- to ovate-elliptic, apex subcaudate-acuminate, base obtuse, 4–15 cm. long, 1.3–7.0 cm. broad, membranaceous, glabrous throughout, opaque, inconspicuously foveate in the axils of the midrib beneath; petioles 0.2–0.4 cm. long, glabrous; umbels terminal, bearing relatively few yellowish- or greenish-white flowers (or purplish according to certain collectors); peduncle 0.2–0.4 cm. long; pedicels 1–2 cm. long, glabrous; calyx-lobes ovate, obtuse to broadly acute, 0.2–0.3 cm. long, coriaceous, closely imbricated at anthesis, glabrous to minutely papillate without, minutely papillate within; corolla salverform, occasionally somewhat inflated at the base, relatively fleshy in texture, the tube 0.9–1.5 cm. long, about 0.1–0.15 cm. in diameter at the base, occasionally dilating to as much as 0.3 cm. below the middle, faucal tube 0.1–0.15 cm. long, about 0.15–0.25 cm. in diameter at the orifice, faucal annulus conspicuous, 5-lobed, glabrous without, minutely puberulent toward the insertion of the stamens within, the lobes obliquely oblong- to obovate-elliptic, obtusish to shortly acuminate, 0.9–1.7 cm. long, reflexed, papillate to minutely puberulent-papillate without, minutely puberulent or pilosulose, particularly toward the base within; anthers conspicuously exserted, ovate-elliptic, 0.25–0.4 cm. long, minutely puberulent dorsally; ovary 0.15–0.2 cm. long, minutely puberulent to puberulent-papillate; stigma 0.1–0.15 cm. long; nectaries $\frac{1}{2}$–$\frac{2}{3}$ equalling the ovary; follicles terete, 10–35 cm. long, 0.4–0.5 cm. in diameter, falcate, glabrous; seeds 3.5–4.5 cm. long, 0.35–0.4 cm. in diameter, glabrous.

BRITISH GUIANA: Pomeroon River, Pomeroon District, Dec. 17–24, 1922, *Cruz 3135* (FM, G, US); Kamakusa, upper Mazaruni River, July 11–22, 1923, *Cruz 4083* (FM); between the Demerara and Berbice Rivers, July 15–19, 1922, *Cruz 1660* (MBG); Amakura River, Northwest District, March 23–30, 1923, *Cruz 3473* (FM, US); Aruka R., Barima R., Northwest District, June, 1908, *Anderson 60* (FM); on bank, Moraballi Creek, near Bartica, alt. near sea-level, Sept. 18, 1929, *Sandwith 283* (NY); rip. fl. Pomeroon, Aug., 1843, *Schomburgk 1378* (B); data incomplete, *Schomburgk 39* (V); *Schomburgk 788* (Camb., MP); *Schomburgk 800* (V); *Schomburgk 951* (B, V).

DUTCH GUIANA: fluv. Coppename sup., Aug., 1901, *Boon 1044* (B, U); Kaboerie, fl. Corantyne, June 21, 1916, *Gonggrijp 2135* (B, US); ad fl. Marowyne med., Aug., 1847, *Kappler 1825* (MP, S, V); ad fl. Marowyne super. in rupestribus, Sept., year lacking, *Kappler 2087* (B); data incomplete, *Kappler 444a* (B, M, MP, S, V); *Kappler 1955* (MP, S); *Hostmann 269* (Camb., D, FM, M, NY, S, V).

FRENCH GUIANA: Karouany, 1855, *Sagot 392* (B, MP, V); *Sagot 1143* (B, MP, V); environs de Godebert, date lacking, *Wackenheim 119* (FM, MP, NY, US); Cayenne, 1819, *Martin s.n.* (B, MP); data incomplete, 1820, *Perrottet s.n.* (MP); 1862–64, *Melinon s.n.* (B, MP).

BRAZIL: PARA: Ilha das Onças, prope Belem do Para, ripis inundatis, Oct. 2, 1903, *Huber 21770* (B); Lago de Alter do Chão, prope Santarem, ripis arenosis, June 22, 1910, *Ducke 21772* (B); in ripis, Rio Oyapoc, June 4, 1904, *Ducke 21775* (B); Bôa Vista, on the Tapajos River, May–June, 1929, *Dahlgren & Sella 96* (FM); low and high land, Aramanahy, Jan. 11, 1932, *Costa 253* (FM, MBG); CEARA: data incomplete, 1842, *Gardner 951* (V); AMAZONAS: Barcellos, Rio Negro, ad rivulum silvestrem, June 13, 1905, *Ducke 21763* (B); Rio Purus, loco Bom Logar, May 14, 1904, *Huber 21762* (B); in fruticetis arenosis siccis ad Ega, Sept., 1831, *Poeppig 2547* (V); prope Panure, ad Rio Vaupes, Oct. 1852–Jan. 1853, *Spruce 2435* (B, Camb., G, MP, NY, V).

Monteiro da Costa reports that the wood of this species is used for fashioning small utensils, such as spoons, etc. It is said to be light and soft. Aublet reported his specific adjective derived from the vernacular name used by the Indians of French Guiana. Other names used by the native population of the species' area of distribution are said to be: "Oonsé balli"; "Jaramiloerang" (Dutch Guiana); "Molongo de Colher" (Para).

11. **Malouetia furfuracea** Spruce, ex Muell.-Arg. in Mart. Fl. Bras. 6^1: 93. 1860; Miers, Apoc. So. Am. 91. 1878.

Malouetia furfuracea Spruce β. *grandifolia* Muell.-Arg. loc. cit. 1860.

Shrubs (fide Ducke and Ule); stems relatively stout, glabrous, inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, narrowly elliptic to broadly oblong-elliptic, apex obtusely subcaudate-acuminate, base obtuse to acute, 5–17 cm. long, 1.5–6.5 cm. broad, membranaceous, glabrous throughout, usually somewhat subnitidulous above, beneath opaque, foveate in the axils of the midrib; petioles 0.3–0.5 cm. long; umbels terminal, bearing relatively few white flowers; peduncle 0.2–0.4 cm. long; pedicels 0.8–2.0 cm. long, glabrous; calyx-lobes ovate, acute to acuminate, 0.3–0.5 cm. long, rather fleshy and coriaceous in texture, closely imbricated at anthesis, glabrous or minutely papillate without, papillate at the tips within, margins minutely ciliolate; corolla salverform, frequently somewhat inflated at the base, rather fleshy in texture, the tube 1.0–1.4 cm. long, about 0.1–0.125 cm. in diameter at the base, faucal tube 0.1–0.125 cm. long, about 0.15 cm. in diameter at the orifice, faucal annulus conspicuous, 5-lobed, glabrous without, minutely puberulent above within, the lobes obliquely ovate- or obovate-elliptic, obtuse to shortly acuminate, 1.3–2.3 cm. long, 0.3–0.45 cm. long, reflexed, papillate to puberulent-papillate without, minutely puberulent toward the base within; anthers conspicuously exserted, ovate-elliptic, 0.3–0.4 cm. long, minutely puberulent dorsally; ovary 0.1–0.125 cm. long, puberulent-papillate; stigma 0.1–0.15 cm. long; nectaries ½–⅔ equalling the ovary; follicles terete, 15–30 cm. long, 0.3–0.4 cm. in diameter, falcate, glabrous; seeds 0.35–0.4 cm. long, about 0.25–0.3 cm. in diameter, rather sparsely pilose or villous.

DUTCH GUIANA: fluv. Suriname sup., July 1, 1921, *Boschwesen 5302* (B, U); ad fl. Lawa, Sept., year lacking, *Kappler 2089* (B).

FRENCH GUIANA: data incomplete, *Richard s.n.* (MP).

BRAZIL: PARA: Lago de Faro, ad ripas, Aug. 20, 1907, *Ducke 21774* (B); Rio Trombetas infer., ad ripas arenosas loco Caipuru, Sept. 16, 1910, *Ducke 21773* (B); RIO DE JANEIRO: data incomplete, *Glaziou 14082* (B); AMAZONAS: Cachoeira Grande, bei Manãos, May, 1910, *Ule 8952* (B); am Strande, Rio Negro, Manãos, Jan., 1901, *Ule 5339* (B); in vicinibus Barra, April, 1851, *Spruce 1003* (B, TYPE, M, NY, V, MBG, photograph and analytical drawings); ad oram meridionalem Rio

Negro, usque ad concursum flum. Solimoes, May, 1851, *Spruce 1566* (B, Camb., G, M, MP, NY, V); prope S. Gabriel do Cachoeira, ad Rio Negro, 1852, *Spruce 2305* (B, Camb., G, MP, NY, V).

The uncertainty which I have encountered in identifying specimens relegated to this species is decidedly conducive to the view that they may constitute merely a variety, or perhaps only a phase, of *M. Tamaquarina.* On the other hand, it cannot be denied that the seeds of the few available fruiting specimens are more or less villous, and that the follicles are somewhat more slender than those of *M. Tamaquarina.* The calyx-lobes alone are certainly insufficient evidence upon which to base the distinction of the species, as Markgraf has recently pointed out (in Pulle, Fl. Surinam **4**: 57. 1932). Nevertheless the latter author has maintained the specificity of *M. furfuracea.* The question is clearly one which will await solution by a student familiar with the plants in the field.

12. **Malouetia glandulifera** Miers, Apoc. So. Am. 90. *pl. 13A.* 1878.

Malouetia Tamaquarina A. DC. β *brasiliensis* Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 92. 1860, not A. DC. as to specimens cited, in part.

Stems relatively stout, glabrous, inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-oblanceolate, apex obtuse or rounded, base broadly acute to obtuse, 5–9 cm. long, 1.5–3.0 cm. broad, subcoriaceous, glabrous throughout, foveate in the axils of the midrib beneath; petioles 0.2–0.4 cm. long; umbels terminal, bearing 5–8 flowers; peduncle 0.2–0.3 cm. long; pedicels 1.3–2.0 cm. long, accrescent in fruit, glabrous; calyx-lobes ovate, broadly acute to obtuse, 0.15–0.175 cm. long, relatively fleshy in texture, closely imbricated at anthesis, generally puberulent-papillate within and without; corolla salverform, the tube 0.9 cm. long, about 0.1 cm. in diameter at the base, faucal tube 0.1 cm. long, about 0.15 cm. in diameter at the orifice, conspicuously annulate (the lobes in desiccation triangular, not divided), glabrous without, very minutely puberulent-papillate within, the lobes obliquely obovate-elliptic, acute, 1.5 cm. long, 0.4–0.5 cm. broad, reflexed, about uniformly papillate to glabrate within and without;

anthers rather inconspicuously exserted (in desiccation), ovate-elliptic, 0.25 cm. long, essentially glabrate dorsally; ovary 0.1 cm. long, minutely puberulent; stigma 0.075 cm. long; nectaries about ⅔ equalling the ovary; follicles terete, 8–10 cm. long, 0.35–0.4 cm. in diameter, divaricate, glabrous; seeds 2.0–2.5 cm. long, glabrous.

VENEZUELA: AMAZONAS: ad flumina Casiquiari, Vasiva et Pacimoni, 1853–4, *Spruce 3305* (B, Camb., G, NY, V, ISOTYPES, MBG, photograph and analytical drawings).

Although the status of this species is somewhat ambiguous in view of its poor representation in herbaria and the manifest variability of the closely neighboring *M. Tamaquaria* and *M. furfuracea,* it appears necessary to recognize it specifically because of its unusual foliage, almost uniformly papillate corolla-lobes, relatively deep insertion of anthers, and construction of the faucal annulus.

The nature of the faucal annulus itself is one which appears to have been widely misinterpreted in past literature. In inaugurating the genera *Malouetia* and *Robbia,* A. de Candolle made no reference to the annulus with regard to the former, on the other hand stating quite definitely (in DC. Prodr. **8**: 378. 1844) ''fauce exappendiculata.'' With regard to the latter, the lobes were described, in part, as ''basi intus in media parte calloso dentatis, appendicibus praetera nullis'' [loc. cit. 445. 1844]. In 1860, however, Mueller consolidated *Malouetia* and *Robbia* and emended the description of the aggregate genus, including the phrase ''Corolla . . . intus fauce 5-appendiculatus [tubus], appendiculae parvae subsquamulaeformes, lobis corollae oppositae [in Mart. Fl. Bras. **6**^{1}: 90. 1860].'' Still later, Miers, usually an acute and intuitive observer, described the corolla-throat of *Malouetia* as ''saepius squamulis 5 praeditus'' [Apoc. So. Am. 86. 1878]; and later, with regard to *Robbia,* censures Delessert [Icon. **5**: *pl. 52.* 1846] for omitting to depict ''the 5 scales which close the mouth of the corolla'' of *R. cestroides* (Nees) A. DC. More recently, Schumann has spoken, with regard to *Malouetia* of the ''Blkr. . . . in der Mitte verengter, am Schlunde 5–10 schuppiger Röhre'' [in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 186. 1895]; and similarly of "im Schlunde beschuppter Röhre" [loc. cit. 187. 1895] of the corolla of *Robbia*. Markgraf has maintained the traditional description of an appendiculate corolla in *Malouetia* by describing the throat as "closed by 5–10 short, triangular scales" [in Pulle, Fl. Surinam **4**: 57. 1932].

One might expect the "scales" of the corolla-throat of *Malouetia* to provide an easy criterion of specific entities, as those of *Prestonia,* for example, and such might be thought to be the case after only a few dissections. After many dissections, however, this hope fades. Not only is a striking variability found among individuals from specimens of the same collector's number, but a more significant phenomenon is found in recently collected specimens which upon careful soaking refuse to divulge the "squamulae" or "scales" at all! Almost exactly identical specimens, made by older collectors, however, usually demonstrate very pronounced "faucal scales."

The genus *Laubertia,* of the American Echitoideae, is typified in part by a corolline structure which appears in well-pressed specimens as a slightly thickened, but still membranaceous, ring or "annulus" at the orifice of the throat. *Prestonia* and *Rhodocalyx* are similarly provided. Quite recently Mr. William A. Schipp, of Stann Creek, British Honduras, has sent me a vial of alcoholic preservative containing several flowers of an apocynaceous genus which was at first examination a perplexing novelty. After careful scrutiny, however, it was recognized as a new species of *Laubertia.* The first failure of recognition was caused by the fact that the corolline orifice, which in well-desiccated material appears to have a well-defined membranaceous annulus, is in fresh material represented by a uniform, callose thickening of the orifice grading indefinitely into the more delicate texture of the corolla-tube and lobes. In other words, the faucal "ring," so manifest in exsiccatae, is not an artifact in itself, but its true nature is greatly altered in desiccation, caused by the drying and consequent collapse of the fleshy tissues of the orifice. Subsequent pressure completes the illusion of the membranaceous "annulus."

After examining a large series of specimens of *Malouetia* previously described as provided with five to ten "scales," a similar interpretation to that arrived at with regard to *Laubertia* appears plausible. It is well to acknowledge, however, that if such be the case, wide knowledge of the living specimens, or at any rate liquid preserves, is necessary for accurate information. From an examination of numerous specimens of recent collection, in which the tissues are relatively resilient upon soaking and heating, it appears that the corolline orifice of *Malouetia* species, as in *Laubertia*, is rather uniformly thickened. The high insertion of the anthers, however, gives to the orifice a five-lobed contour. The anthers, which alternate with the corolla-lobes, also protrude beyond the faucal annulus in most species. These factors, together, would appear to be responsible for the configuration of the "squamulae" or "faucal scales" in material which has been long desiccated; whose tissues, as every systematic botanist can testify, have consequently lost their earlier powers of resilience.

In *Malouetia glandulifera* the "faucal scales" of the herbarium material available (collected in 1853–54) are definitely acute-triangular, entire, and quite unlike those of *M. Tamaquarina* specimens of comparable age, which are broader, lower, rounded, and usually more or less bifid. It is not meant to imply that faucal differences do not exist between these two species: such is probably the case. Nevertheless it will probably be agreed that difficulty would be encountered in an attempt either to reconstruct the living condition from the desiccated, or to recognize the living from a description of the desiccated.

13. Malouetia peruviana Woodson, spec. nov.

Arbuscula (3–7 m. alta, fide Klug); ramulis teretibus crassiusculis glaberrimis maturitate inconspicue lenticellatis; foliis oppositis breviter petiolatis anguste oblongo- vel ovato-ellipticis aut acute aut subcaudate acuminatis 5–20 cm. longis 1.5–8.5 cm. latis subcoriaceis glaberrimis supra subnitidulis subtus opacis in axillis nervi medii conspicuissime foveatis; petiolis 0.3–0.5 cm. longis; umbellis terminalibus flores 3–8 viridi-albidas gerentibus; pedunculo 0.2–0.5 cm. longo; pedicellis 1.0–1.5 cm. longis glaberrimis; calycis laciniis ovatis obtusis vel late acutis 0.25–0.4 cm. longis subcoriaceis valde imbricatis extus intusque minutissime papillatis glabratisve; corollae salverformis cereolae tubo 1.2–1.5 cm. longo basi ca. 0.15–0.3 cm. diametro metiente supra saepius paululo dilatato faucibus tubulari-campanulatis ca. 0.1 cm. longis ostio ca. 0.25–0.3 cm. diametro metiente ibique conspicue calloso-annulato extus glabro intus prope insertionem staminum minute puberulo-papillato lobis oblique ovato- vel obovato-ellipticis acutis 1.2–1.7 cm. longis 0.5–0.7 cm. latis patentibus intus extusque minute papillatis glabratisve; antheris conspicue exsertis ovato-ellipticis 0.4–0.5 cm. longis, glabris glabratisve; ovario 0.15 cm. longo minute puberulo; stigmate 0.15 cm. longo; nectariis ovarium ½–⅔ aequantibus; folliculis ignotis.

Small trees (3–7 m. tall, fide Klug); stems terete, relatively stout, glabrous, inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, lance- to ovate-elliptic, apex acutely and frequently subcaudate-acuminate, 5–20 cm. long, 1.5–8.5 cm. broad, subcoriaceous, glabrous throughout, above somewhat subnitidulous, beneath opaque, very conspicuously foveate in the axils of the midrib; petioles 0.3–0.5 cm. long; umbels terminal, bearing 3–8 greenish-white flowers; peduncle 0.2–0.5 cm. long; pedicels 1.0–1.5 cm. long, glabrous; calyx-lobes ovate, obtuse to broadly acute, 0.25–0.4 cm. long, subcoriaceous, closely imbricated at anthesis, minutely papillate to glabrate throughout; corolla salverform, rather thick and waxy in texture, the tube 1.2–1.5 cm. long, about 0.15–0.3 cm. in diameter at the base, very slightly dilated above if at all, faucal tube campanulate, 0.1 cm. long, about 0.25–0.3 cm. in diameter at the orifice, conspicuously callose-annulate, glabrous without, minutely puberulent-papillate within toward the insertion of the stamens, the lobes obliquely ovate- or obovate-elliptic, acute, 1.2–1.7 cm. long, 0.5–0.7 cm. broad, reflexed, about uniformly papillate to glabrate within and without; anthers conspicuously exserted, ovate-elliptic, 0.4–0.5 cm. long, glabrous to glabrate; ovary 0.15 cm. long, minutely puberulent; stigma 0.15 cm. long; nectaries about ½–⅔ equalling the ovary; follicles unknown.

PERU: LORETO: woods, Iquitos, alt. about 100 m., Aug. 3–11, 1929, *Killip & Smith 27004* (FM, MBG, TYPE, NY, US); Aug. 2–8, 1929, *Killip & Smith 27371* (MBG, NY, US); Mishuyacu, near Iquitos, forest, alt. 100 m., Febr.–March, 1930, *Klug, 972* (FM, NY, US); Caballo-Cocha, on the Amazon River, Aug., 1929, *Williams 2089* (FM, MBG); Timbuchi, on the Rio Nanay, June–July, 1929, *Williams, 928* (FM, MBG); *Williams 973* (FM, MBG).

There can be little doubt that this species is distinct from *M. Tamaquarina* and *M. furfuracea* for which it has previously been mistaken. Its salient characteristic, as indicated in the key to species, are supplemented by many minor ones which may be detected through a comparison of the foregoing descriptions.

14. **Malouetia amplexicaulis** Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 91. 1860; Miers, Apoc. So. Am. 91. 1878; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 187. 1895.

Stems relatively stout, glabrous, rather inconspicuously lenticellate when fully mature; leaves opposite, sessile or subsessile, appearing more or less amplexicaul, broadly oblong-elliptic, apex obtusely, and almost subcaudately, acuminate, base obtuse to rounded, or slightly cordate, 9–23 cm. long, 3.5–10 cm. broad, firmly membranaceous, glabrous throughout, somewhat subnitidulous above, beneath opaque and rather inconspicuously foveate in the axils of the midrib; umbels terminal, relatively few-flowered; peduncle 0.15–0.4 cm. long; pedicels 1.0–1.5 cm. long, glabrous; calyx-lobes ovate, obtuse, 0.2–0.3 cm. long, somewhat subcoriaceous, closely imbricated at anthesis, minutely papillate within and without; corolla salverform, the tube 1.2–1.3 cm. long, about 0.125 cm. in diameter at the base, faucal annulus about 0.075 cm. long, about 0.15 cm. in diameter at the orifice, conspicuously callose-annulate, glabrous without, minutely puberulent within toward the insertion of the stamens, the lobes obliquely and broadly oblong-elliptic, obtuse to acute, 0.8–0.9 cm. long, reflexed, very minutely and indefinitely papillate without, minutely puberulent or puberulent-papillate within; anthers conspicuously exserted, oblong-elliptic, 0.3–0.35 cm. long, minutely puberulent dorsally; ovary 0.1 cm. long, densely puberulent-papillate; stigma 0.075 cm. long; nectaries about ½ equalling the ovary; follicles unknown.

BRAZIL: AMAZONAS: prope Panure ad Rio Vaupes, Oct. 1852–Jan. 1853, *Spruce 2595* (Camb., G, MP, NY, V, ISOTYPES, MBG, photograph and analytical drawings).

The chief, if not the only, distinction of *M. amplexicaulis* appears to be the rather large, nearly sessile and amplexicaul foliage. However, but a single collection is known to us, and this, together with the fact that all specimens are rather meagre, renders the status of the species somewhat dubious. It is to be hoped that the renewed botanical activity in the upper Amazon Valley may lead to the rediscovery of this interesting plant.

15. **Malouetia Killipii** Woodson, Ann. Mo. Bot. Gard. **18:** 551. 1931.

Small trees (5–10 m. tall, fide Klug; Killip & Smith); stems relatively stout, terete, minutely puberulent when very young, soon becoming glabrate, rather inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, narrowly oblong- to broadly ovate-elliptic, apex obtusely and narrowly subcaudate-acuminate, base obtuse to rounded, 15–25 cm. long, 5–12 cm. broad, membranaceous, above somewhat subnitidulous, glabrous, beneath densely and minutely velutinous-puberulent; petioles 0.3–0.7 cm. long; umbels terminal, infrequently lateral as well, bearing several greenish-white flowers; peduncle 0.3–0.5 cm. long; pedicels 0.5–1.0 cm. long, very minutely papillate to essentially glabrous; calyx-lobes ovate, obtuse to broadly acute, 0.15–0.25 cm. long, somewhat subcoriaceous, closely imbricated at anthesis, minutely papillate within and without; corolla salverform, somewhat thick and waxy in texture, the tube 1.1–1.2 cm. long, about 0.1 cm. in diameter at the base, faucal tube 0.1 cm. long, about 0.15–0.2 cm. in diameter at the orifice, conspicuously callose-annulate, glabrous to minutely papillate without, minutely puberulent within toward the insertion of the stamens, the lobes obliquely ovate, acute to obtuse, 0.9–1.2 cm. long, 0.35–0.5 cm. broad, reflexed, papillate without, minutely puberulent within toward the base; anthers conspicuously exserted, ovate-elliptic, 0.25–0.3 cm. long, minutely puberulent dorsally; ovary 0.1 cm. long, minutely puberulent; stigma 0.15 cm. long; nectaries ½–¾ equalling the ovary; follicles unknown.

PERU: LORETO: woods, Iquitos, alt. about 100 m., Sept. 26, 1929, *Killip & Smith 29860* (FM, MBG, TYPE, NY, US); forest, Mishuyacu, near Iquitos, alt. 100 m., Oct.–Nov., 1929, *Klug 79* (B, FM, US).

Sect. 2. GRACILES Woodson. Corolla-tube cylindrical, abruptly constricted at the insertion of the stamens; anthers narrowly oblong- to linear-elliptic, wholly included, inserted about midway or deeper within the corolla-tube. *Spp. 16–20.*

KEY TO THE SPECIES

a. Corolla-tube 0.7–1.5 cm. long; species of eastern tropical South America.
  b. Corolla-lobes ovate-oblong; ovary glabrous; plants of British Guiana.... ....*16. M. gracilis*
  bb. Corolla-lobes linear to oblong-lanceolate; ovary pubescent; species of northern Brazil.
    c. Corolla-lobes about as long as the tube or somewhat shorter; stamens inserted at somewhat below midway within the corolla-tube.
      d. Corolla-lobes oblong- to ovate-lanceolate; corolla-tube not narrowing toward the orifice; anthers glabrous; leaves coriaceous or subcoriaceous.......................................*17. M. virescens*
      dd. Corolla-lobes linear-lanceolate; corolla-tube extremely slender, narrowing toward the orifice; anthers minutely pilosulose; leaves delicately membranaceous..........................*18. M. gracillima*
    cc. Corolla-lobes about twice as long as the tube, or nearly so; stamens inserted about midway within the corolla-tube..............*19. M. nitida*
aa. Corolla-tube 0.4–0.55 cm. long; plants of Central America..*20. M. guatemalensis*

16. Malouetia gracilis (Benth.) A. DC. in DC. Prodr. **8**: 380. 1844; Miers, Apoc. So. Am. 87. 1878; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 187. 1895.

Tabernaemontana gracilis Benth. in Hook. Jour. Bot. **3**: 244. 1841.

Stems relatively slender, terete, glabrous, rather inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-elliptic, apex acuminate, base obtuse, 3.5–8.0 cm. long, 1–3 cm. broad, membranaceous, glabrous throughout, above subnitidulous, beneath opaque, pallid; petioles 0.3–0.5 cm. long, glabrous; umbels terminal, few-flowered; peduncle 0.1–0.3 cm. long; pedicels 0.3–0.5 cm. long, glabrous; calyx-lobes ovate, acute, closely imbricated, 0.225–0.25 cm. long, glabrous without, minutely puberulent-papillate within toward the tips; corolla salverform, the tube cylindrical, abruptly constricted at the insertion of the stamens, 1.4–1.5 cm. long, about

0.125 cm. in diameter at the base, about 0.15 cm. in diameter at the orifice, glabrous without, minutely puberulent within above the insertion of the stamens, somewhat callose-thickened generally above the insertion of the stamens (appearing as 5–10 linear welts in desiccation), the lobes ovate-oblong, acute, 0.9–1.0 cm. long, densely puberulent-papillate without and within, widely spreading; anthers included, inserted at somewhat below midway within the corolla-tube, narrowly oblong- to linear-elliptic, 0.35 cm. long, glabrous; ovary 0.1 cm. long, glabrous; stigma 0.075 cm. long; nectaries about ½ equalling the ovary; follicles terete, relatively short and stout, 5.0–5.5 cm. long, rigidly divaricate, glabrous; seeds 0.7–0.9 cm. long, glabrous.

BRITISH GUIANA: upper Essequibo River, Jan., 1842, *Schomburgk 39* (B, Camb., G, NY, ISOTYPES, MBG, photograph and analytical drawings).

17. **Malouetia virescens** Spruce, ex Muell.-Arg. in Mart. Fl. Bras. **6**[1]: 92. 1860; Miers, Apoc. So. Am. 90. 1878; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**[2]: 187. 1895.

Small trees (according to Ducke); stems relatively stout, terete, glabrous, rather inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-elliptic, apex acute to obtuse, base obtuse to broadly acute, 4.5–10.0 cm. long, 1.5–3.0 cm. broad, coriaceous or subcoriaceous, glabrous throughout, nitidulous above, opaque and inconspicuously foveate in the axils of the midrib beneath; petioles 0.3–0.4 cm. long; umbels terminal, few-flowered; peduncle 0.1–0.2 cm. long; pedicels 0.5–0.8 cm. long, glabrous; calyx-lobes ovate, broadly obtuse, 0.125–0.2 cm. long, somewhat coriaceous, closely imbricated at anthesis, glabrous without, very minutely and indefinitely papillate within; corolla salverform, the tube cylindrical, abruptly constricted at the insertion of the stamens, 0.8–1.0 cm. long, about 0.1 cm. in diameter at the base, about 0.125–0.15 cm. in diameter at the orifice, somewhat callose-thickened generally in the region of the orifice (appearing as 5–10 linear welts in desiccation), glabrous without, minutely and indefinitely papillate above the insertion of the stamens within, the lobes oblong- to ovate-lanceolate, acute, 0.7–1.1 cm. long, 0.25–0.3 cm. broad, widely spreading, minutely papillate to essentially glabrous without, puberulent-papillate toward the base within; anthers included, inserted somewhat below midway within the corolla-tube, narrowly oblong- to linear-elliptic, 0.325–0.375 cm. long, glabrous or essentially so; stigma 0.15 cm. long; ovary 0.1 cm. long, very minutely puberulent; nectaries about ½ equalling the ovary; follicles unknown.

BRAZIL: AMAZONAS: prope Panure ad Rio Vaupes, Oct. 1852–Jan. 1853, *Spruce 2472* (B, TYPE, Camb., G, NY, MBG, photograph and analytical drawings); Rio Curicuriary, affl. R. Negro super., in ripis profunde inundatis, Dec. 23, 1931, *Ducke 23956* (B).

18. Malouetia gracillima Woodson, spec. nov.

Ramulis teretibus gracilibus glaberrimis; foliis oppositis petiolatis ellipticis apice acute obtuseve acuminatis basi obtusis 5–10 cm. longis 2.8–4.0 cm. latis tenuiter membranaceis omnino glaberrimis supra nitidis et eleganter venosis subtus opacis in axillis nervi medii obscure foveatis; petiolis 0.3–0.6 cm. longis; umbellis et terminalibus et lateralibus flores paucas parvas gracillimas gerentibus; pedunculo 0.1–0.15 cm. longo; pedicellis 0.4–0.6 cm. longis glabris; calycis laciniis ovatis vel ovato-lanceolatis acutis 0.09–0.15 cm. longis extus intusque minute puberulo-papillatis margine ciliolatis; corollae graciliter salverformis tubo 1.0–1.1 cm. longo basi ca. 0.1 cm. diametro metiente faucibus ca. 0.125 cm. diametro metientibus vix incrassatis extus glabro intus prope fauces minute puberulo-papillato lobis oblique lineari-lanceolatis acuminatis 0.8–1.0 cm. longis 0.08–0.1 cm. latis extus minute papillatis intus basi puberulo-papillatis patulis; antheris inclusis paulo sub medio corollae tubi insertis lineari-ellipticis 0.3 cm. longis sparse minutissimeque pilosulis; ovario 0.05 cm. longo minutissime puberulo; stigmate 0.1 cm. longo; nectariis ovario multo brevioribus; folliculis ignotis.

Stems terete, relatively slender, glabrous; leaves opposite, petiolate, elliptic, apex acutely or obtusely acuminate, base obtuse, 5–10 cm. long, 2.8–4.0 cm. broad, delicately membranaceous, glabrous throughout, nitid and elegantly veined above, beneath opaque, obscurely foveate in the axils of the midrib; petioles 0.3–0.6 cm. long; umbels both terminal and lateral, bearing relatively few, small, graceful flowers; peduncle 0.1–0.15 cm. long; pedicels 0.4–0.6 cm. long, glabrous; calyx-lobes ovate or ovate-lanceolate, acute, 0.09–0.15 cm. long, minutely puberulent-papillate without and within, the margin ciliolate; corolla gracefully salverform, the tube 1.0–1.1 cm. long, about 0.1 cm. in diameter at the base, about 0.125 cm. in diameter at the orifice, abruptly constricted at the insertion of the stamens, glabrous without, minutely puberulent-papillate toward the throat, the lobes obliquely linear-lanceolate, acuminate, 0.8–1.0 cm. long, about 0.08–0.1 cm. broad, minutely papillate without, puberulent-papillate toward the base within, spreading; anthers included, inserted somewhat below midway within the corolla-tube, narrowly oblong- or linear-elliptic, 0.3 cm. long, sparsely and minutely pilosulose dorsally; ovary 0.05 cm. long, very minutely puberulent; stigma 0.1 cm. long; nectaries much shorter than the ovary (scarcely manifest); follicles unknown.

BRAZIL: AMAZONAS: Lages, April 8, 1879, *Traill 517* (G, TYPE, K, MBG, photograph and analytical drawings).

This is the most distinctive of the South American species of sect. *Graciles,* and is unmistakable because of its extremely narrow corolla-tube. Traill reports the plant as the "Ygapo tree."

19. **Malouetia nitida** Spruce, ex Muell.-Arg. in Mart. Fl. Bras. **6**[1]: 94. 1860; Miers, Apoc. So. Am. 91. 1878.

Stems relatively stout, terete, glabrous, greyish-brown, rather inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-elliptic, apex acutely acuminate, base obtuse to rounded, 8–15 cm. long, 3–6 cm. broad, membranaceous, glabrous throughout, nitid above, beneath opaque, obscurely and rather infrequently foveate in the axils of the midrib; petioles 0.2–0.5 cm. long; umbels terminal, occasionally lateral as well, bearing several flowers; peduncle 0.3–0.5 cm. long; pedicels 1.2–1.5 cm. long, glabrous; calyx-lobes ovate, acute, 0.2–0.25 cm. long, minutely puberulent-papillate at the tips without and within, otherwise essentially glabrous; corolla salverform, the tube cylindrical, abruptly constricted at the insertion of the stamens, 0.7–0.75 cm. long, about

0.125 cm. in diameter at the base and orifice, very indefinitely papillate without, minutely papillate to puberulent-papillate within toward the throat, the lobes linear-oblong, acute to acuminate, 1.3–1.4 cm. long, widely spreading to reflexed, glabrous without, minutely puberulent toward the base within; anthers included, inserted at about midway within the corolla-tube, linear-elliptic, 0.3 cm. long, essentially glabrous; ovary 0.1 cm. long, minutely puberulent-papillate; stigma 0.12 cm. long; nectaries about ½ equalling the ovary; follicles unknown.

BRAZIL: AMAZONAS: prope Barra, Prov. Rio Negro, Aug., 1851, *Spruce 1672* (B, Camb., G, ISOTYPES, MBG, photograph and analytical drawings).

20. **Malouetia guatemalensis** (Muell.-Arg.) Standl. Jour. Wash. Acad. Sci. **15**: 459. 1925.

Stemmadenia guatemalensis Muell.-Arg. Linnaea **30**: 410. 1860.

Malouetia panamensis Heurck & Muell.-Arg. in Heurck, Obs. Bot. 185. 1871.

Small trees (5–10 m. tall, fide Pittier; "large trees," fide Schipp); stems relatively stout, terete, reddish-brown, glabrous, inconspicuously lenticellate when fully mature; leaves opposite, petiolate, oblong- to ovate-elliptic, obtusely subcaudate-acuminate, base obtuse, 6–25 cm. long, 2–10 cm. broad, firmly membranaceous, glabrous throughout, somewhat nitidulous above, beneath opaque, conspicuously foveate in the axils of the midrib; petioles 0.5–1.0 cm. long, glabrous; umbels terminal, frequently lateral as well, bearing relatively numerous small, greenish-white flowers; peduncle 0.1–0.3 cm. long; pedicels 0.3–0.5 cm. long, glabrous or very minutely papillate; calyx-lobes ovate, acute to obtuse, subcoriaceous, closely imbricated, 0.15–0.25 cm. long, minutely puberulent-papillate within and without; corolla salverform, the tube abruptly constricted at the insertion of the stamens, somewhat inflated above the base, 0.4–0.55 cm. long, about 0.125–0.15 cm. in diameter at the base, orifice about 0.15 cm. in diameter, callose-thickened (appearing as 5 linear, double welts in desiccated material), glabrous without, or minutely papillate toward the orifice, essentially glabrous within, the lobes obliquely lanceolate- to ovate-oblong, acuminate, 0.7–1.2 cm. long, 0.2–0.3 cm. broad, widely spreading, puberulent-papillate within, papillate without; anthers included, inserted slightly below midway within the corolla-tube, narrowly oblong-elliptic, 0.2 cm. long, very minutely puberulent-papillate dorsally; ovary 0.1 cm. long, minutely papillate; stigma 0.075 cm. long; nectaries ½ to about equalling the ovary; follicles stout, fusiform, rigidly divaricate, 10–13 cm. long, 1–2 cm. in diameter, glabrous; seeds 2.5–3.0 cm. long, glabrous.

BRITISH HONDURAS: brackish swamps, South Stann Creek, Sept. 17, 1930, *Schipp 653* (B, FM, MBG, NY); data incomplete, *Peck 671* (B).

GUATEMALA: IZABAL: Mniogalpa, 1841, *Friedrichsthal 138* (V, TYPE, MBG, photograph and analytical drawings); Livingston, June, 1906, *Tuerckheim II 1233* (FM, US); same locality, Febr. 17, 1905, *Deam s.n.* (NY, US).

HONDURAS: ATLANTIDA: vicinity of Tela, at sea-level, Dec. 14–March 15, 1928, *Standley 54737* (FM, US); forest trail west of Tela River, Puerto Sierra, Febr. 15, 1903, *Wilson 422* (FM, NY, US).

NICARAGUA: data incomplete, *Wright s.n.* (B, US).

COSTA RICA: LIMON: Cienequita, près Limon, litt. Atlantique, July, 1911, *Pittier 16137* (B).

PANAMA: BOCAS DEL TORO: Laguna de Chiriqui and its neighborhood, Nov.–Dec., 1885, *Hart 128* (US); Changuinola Valley, 1927, *Cooper & Slater 113* (FM, US); CANAL ZONE: wooded swamp, common, between France Field and Catival, Prov. of Colon, Jan. 9, 1924, *Standley 30184* (US); near Fort Randolph, swampy woods, common, Dec. 28, 1923, *Standley 28636* (US); in low, wet woods near Frijoles Sta., P. R. R., Febr., 1861, *Hayes 55* (B, G); Chagres, Jan.–March, 1850, *Fendler 184* (MBG, US); forest along the Rio Indio de Gatun, near sea-level, Febr. 17, 1911, *Pittier 2813* (FM, NY, US); around Frijoles, in forest and thickets, alt. 25–30 m., July 1, 1911, *Pittier 3752* (NY, US).

This truly distinctive species is probably entitled to sectional rank in the genus *Malouetia,* because of its large, fusiform follicles and peculiar corolla-tube construction. It is difficult to base classification of the genus upon fruit characters at the present time, however, as follicles are unknown for certain of the species, as has already been indicated. Although seemingly distant from the South American species, the relationships of *M. guatemalensis* are evidently most closely with those of sect. *Graciles,* as evidenced not only by the deep insertion of the anthers, but the character of the callose thickening of the corolla throat as well.

EXCLUDED OR UNCERTAIN SPECIES

Malouetia asiatica Sieb. & Zucc. Abh. Akad. München **4**^{3}: 163. 1846 = **Trachelospermum asiaticum** (Sieb. & Zucc.) Nakai, in Mori, Pl. Cor. 293. 1922.

Malouetia guianensis Klotzsch, in Schomb. Faun. & Fl. Guian. 952. 1841, nom. nud. This may possibly refer to *Cameraria Guyanensis* Aubl. Hist. Pl. Gui. Fr. **1**: 262. 1775, which is synonymous with **Malouetia Tamaquarina** (Aubl.) A. DC. in DC. Prodr. **8**: 378. 1844.

Malouetia jasminoides HBK. Nov. Gen. **3**: 226. 1819 = **Tabernaemontana amygdalifolia** Jacq. Select. Stirp. Am. Hist. **1**: 39. *pl. 181. fig. 15.* 1763.

Malouetia lactiflua Miers, Apoc. So. Am. 88. 1878. Based upon *Schomburgk 168.* Impressed by the notation of the collection with regard to a milky exudation, Miers expressed the unequivocable interpretation of it as a *Malouetia.* The specimen is fragmentary and vegetative only, and as the leaves show no indication of the familiar foveae in the axils of the midrib beneath, its relegation to an undetermined species of *Zschokkea* by Sandwith (in herb. Kew.) appears far better substantiated by our present knowledge than that of Miers.

Malouetia puberula Klotzsch, in Schomb. loc. cit. 1841, nom. nud.

Malouetia riparia (HBK.) A. DC. loc. cit. 380. 1844 (*Tabernaemontana riparia* HBK. loc. cit. 228. 1819) = **Stemmadenia grandiflora** (Jacq.) Miers, loc. cit. 75. 1878 (*Tabernaemontana grandiflora* Jacq. Enum. Pl. Carib. 14. 1760).

Malouetia ? sessilis (Vell.) Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 96. 1860 (*Echites sessilis* Vell. Fl. Flum. 111. 1830; Icon. **3**: *pl. 35.* 1827). The plate cited indicates the plant to be a liana. Since no characters of a *Malouetia* are indicated save a sessile, umbellate inflorescence and exserted anthers of a small flower, it appears impossible to hazard a suggestion concerning the generic affinities of this species.

Malouetia tetrastachya (HBK.) Miers, loc. cit. 92. 1878 = **Tabernaemontana tetrastachya** HBK. loc. cit. 227. 1819.

Robbia macrocarpa (Rich.) Miers, loc. cit. 108. 1878 (*Echites*

? macrocarpa Rich. Fl. Cub. **2**: 86. 1853, not Wall.) = **Catalpa macrocarpa** (Rich.) Ekman, in Urb. Symb. Ant. **9**: 254. 1924.

IX. ODONTADENIA Benth.

Odontadenia Benth. in Hook. Jour. Bot. **3**: 242. 1841; A. DC. in DC. Prodr. **8**: 359. 1844; Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 116. 1860; Benth. & Hook. Gen. Pl. **2**: 723. 1876; Miers, Apoc. So. Am. 126. 1878; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 169. 1895.

Anisolobus A. DC. loc. cit. 395. 1844; Muell.-Arg. loc. cit. 110. 1860; Miers, loc. cit. 168. 1878.
Cylicadenia Lem. in Van Houtte, Illustr. Hort. **2**: Misc. 9. 1855.
Angadenia Miers, loc. cit. 173. 1878, in part.
Perictenia Miers, loc. cit. 182. 1878.
Mitozus Miers, loc. cit. 217. 1878, in part.
Codonechites Mgf. Notizblatt **9**: 80. 1924.
Echites of early authors, in part, not P. Br.

Lactescent, fruticose or suffruticose lianas, very rarely becoming suberect. Stems volubile, terete, the branches opposite, or opposite below becoming alternate above. Leaves opposite, entire, penninerved, eglandular; nodes stipulate or exstipulate. Inflorescence lateral, or both terminal and lateral, thyrsiform to simply scorpioid, bracteate, multiflorous to subuniflorous. Calyx 5-parted, the lobes essentially equal to conspicuously unequal, cleft nearly to the receptacle, imbricated, bearing within 5 to many alternate or indefinitely distributed squamellae. Corolla infundibuliform or infrequently salverform, the tube straight or very slightly gibbous, exappendiculate within, the limb actinomorphic, 5-parted, dextrorsely convolute. Stamens 5, the anthers connivent and agglutinated to the stigma, consisting of 2 parallel sporangia borne ventrally near the apex of an enlarged, sagittate, narrowly 2-lobed, peltate connective; pollen granular; filaments short, subcylindrical, usually densely pilosulose. Carpels 2, united at the apex by a common stylar shaft surmounted by the fusiform or subcapitate, inconspicuously maniculate or 5-digitate stigma;

ovules many, several-seriate, borne upon an axile, binate placenta. Nectaries 5, usually concrescent, rarely more or less separate. Follicles 2, apocarpous, terete or more or less flattened laterally, dehiscing along the ventral suture, containing many dry, truncate, apically comose seeds.

Type species: *Odontadenia Hoffmannseggiana* (Steud.) Woodson, in Gleason & A. C. Smith, Bull. Torrey Bot. Club **60**: 392. 1933.

KEY TO THE SUBGENERA AND SECTIONS

A. Inflorescence thyrsiform; calyx-lobes unequal; stipules present, caducous; stems conspicuously lenticellate at maturity........Subgen. I. ANISOLOBUS
  B. Corolla definitely infundibuliform, the throat conspicuously dilated (except in *O. gracilipes*); stipules 2, laminate, scarious...Sect. 1. VERRUCOSAE
  BB. Corolla salverform to subsalverform, the tube dilating but slightly; stipules several, filiform, subfoliaceous...............Sect. 2. ANOMALAE
AA. Inflorescence not thyrsiform; calyx-lobes essentially equal; stipules absent or extremely indefinite; stems not lenticellate, or very inconspicuously so above....................................Subgen. II. EUODONTADENIA
  B. Corolla 2.5–8 cm. long; stigma fusiform, frequently maniculate.
    C. Inflorescence both terminal and lateral; nectary deeply and indefinitely multifid; anthers densely hirsutulose dorsally...Sect. 3. HOFFMANNSEGGIANAE
    CC. Inflorescence lateral; nectary 5-lobed, the divisions entire or merely crenulate; anthers glabrous to puberulent-papillate dorsally...Sect. 4. NITIDAE
  BB. Corolla 1.8–2.1 cm. long; stigma subcapitate, digitate...Sect. 5. LAXIFLORAE

Subgen. I. ANISOLOBUS (A. DC.) Woodson, comb. nov.
Anisolobus A. DC. in DC. Prodr. **8**: 395. 1844; Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 110. 1860; Miers, Apoc. So. Am. 168. 1878, pro gen.

Corolla-tube straight, or slightly gibbous or arcuate; calyx-lobes unequal, the outer shorter and broader than the inner; inflorescence thyrsiform; stipules present, interpetiolar, caducous; stems conspicuously lenticellate. *Sects. 1–2.*

Sect. 1. VERRUCOSAE Woodson. Corolla definitely infundibuliform, the throat conspicuously and abruptly dilated (except in *O. gracilipes* where subsalverform); inflorescence terminal, or both terminal and lateral, the subtending leaves opposite; stipules 2, laminate, scarious. *Spp. 1–17.*

KEY TO THE SPECIES

a. Corolla infundibuliform.
  b. Stamens inserted within the corolla-tube proper below the dilation of the throat.
    c. Calyx-lobes 0.5–0.9 cm. long.
      d. Corolla densely and minutely velutinous-papillate without, at least in the bud..*1. O. cognata*
      dd. Corolla glabrous without, very rarely with inconspicuous, scattering trichomes.
        e. Corolla-throat about 1.5 cm. in diameter, abruptly dilating from the proper tube....................................*2. O. funigera*
        ee. Corolla-throat 0.3–0.7 cm. in diameter, gradually dilating from the proper tube.
          f. Corolla-throat 2.6–3.0 cm. long, 0.3–0.4 cm. in diameter, the lobes 0.7–0.9 cm. long; leaves 12–15 cm. long.........*3. O. surinamensis*
          ff. Corolla-throat 1.9–2.1 cm. long, 0.7 cm. in diameter, the lobes 1.8–2.0 cm. long; leaves 6–10 cm. long..............*4. O. neglecta*
    cc. Calyx-lobes 0.2–0.55 cm. long.
      d. Leaves not cordate; nectary fleshy, essentially entire or obscurely and irregularly 5-cleft, or multifid.
        e. Corolla densely and minutely velutinous-papillate without, at least in the bud..*5. O. verrucosa*
        ee. Corolla glabrous without.
          f. Inflorescence lateral; corolla-throat narrowly conical, about 0.55 cm. in diameter.............................. *6. O. affinis*
          ff. Inflorescence terminal; corolla-throat broadly conical, about 1 cm. in diameter..................................*7. O. Killipii*
      dd. Leaves obscurely cordate; nectary membranaceous, conspicuously 2-lobed...*8. O. cordigera*
  bb. Stamens inserted at the base of the corolla-throat.
    c. Corolla-throat campanulate to conical-campanulate; leaves frequently obscurely cordate..*9. O. lutea*
    cc. Corolla-throat tubular to subtubular; leaves never cordate.
      d. Corolla minutely velutinous-papillate without, at least in the bud.
        e. Leaves glabrous throughout......................*10. O. puncticulosa*
        ee. Leaves minutely tomentulose beneath..................*11. O. spoliata*
      dd. Corolla glabrous without.
        e. Calyx-lobes as long as the corolla-tube proper, or nearly so...... ....*12. O. Perrottetii*
        ee. Calyx-lobes manifestly shorter than the corolla-tube proper.
          f. Calyx glabrous without......................*13. O. Sandwithiana*
          ff. Calyx more or less densely puberulent-papillate without.
            g. Outer calyx-lobes nearly equalling the inner, the latter about ½ the length of the corolla-tube proper; species of South America.
              h. Inflorescence terminal, many-flowered (30–50); corolla-throat about 3.5 cm. long..................*14. O. lauretiana*

hh. Inflorescence lateral, few-flowered (2–6); corolla-throat 2.0–2.6 cm. long................................*15. O. Kochii*

gg. Outer calyx-lobes much shorter than the inner, the latter about ⅔ the length of the corolla-tube proper; plants of British Honduras..................................*16. O. Schippii*

aa. Corolla subsalverform.......................................*17. O. gracilipes*

1. Odontadenia cognata (Stadelm.) Woodson, Ann. Mo. Bot. Gard. **18**: 546. 1931.

Echites cognata Stadelm. Flora **24**[1]: Beibl. 79. 1841; A. DC. in DC. Prodr. **8**: 470. 1844.

Anisolobus cognatus (Stadelm.) Muell.-Arg. in Mart. Fl. Bras. **6**[1]: 113. 1860.

Angadenia cognata (Stadelm.) Miers, Apoc. So. Am. 176. 1878.

Odontadenia augusta Woodson, loc. cit. 548. 1931.

Stems relatively stout, dull reddish-brown, finely puberulent-papillate when young, glabrate and conspicuously lenticellate when fully mature; leaves opposite, petiolate, broadly elliptic to oblong-elliptic, occasionally to obovate-elliptic, apex acute to acuminate, base obtuse to attenuate, 8–17 cm. long, 3–9 cm. broad, firmly membranaceous to chartaceous, either surface glabrous, opaque; petioles 0.9–2.0 cm. long; stipules 2, ovate-trigonal, acuminate, 0.3–0.4 cm. long, scarious, caducous; inflorescence corymbose-thrysiform, terminal, about equalling or somewhat surpassing the subtending leaves, bearing 20–50 yellow, reddish-tinged flowers; pedicels 1.0–1.5 cm. long, somewhat accrescent in fruit, densely and minutely puberulent; bracts ovate-trigonal 0.2–0.4 cm. long, scarious, caducous; calyx-lobes broadly ovate to ovate-oblong, obtuse or rounded, unequal, 0.55–0.8 cm. long, scarious, densely puberulent-papillate without, the internal squamellae in alternate groups of 2–6; corolla infundibuliform, densely velutinous-papillate without, the proper-tube 1.2–2.0 cm. long, about 0.35 cm. in diameter at the base, the throat narrowly conical to conical-campanulate, 2–3 cm. long, 0.5–1.0 cm. in diameter at the orifice, the lobes broadly dolabriform, obtuse or rounded, 1.5–1.8 cm. long, widely spreading; stamens inserted in the corolla-tube proper below the dilation of the throat, the anthers narrowly elliptic to linear, 0.4–0.6 cm. long, papillate dorsally; ovary broadly ovoid, 0.1–0.15 cm. long, minutely velutinous to glabrate; stigma fusiform, usually broadly 2-lobed, 0.2–0.3 cm. long; nectaries concrescent, entire or more or less undulate or crenulate, ½ to ⅔ as long as the ovary; mature follicles unknown.

PANAMA: COLON: high hills back of Puerto Obaldia, San Blas Coast, alt. 50–200 m., Aug., 1911, *Pittier 4329* (B, S, US).

BRAZIL: PARA: Belem do Para, silva secundaria, loco humido, Febr. 1, 1928, *Ducke 21585* (B); Santa Izabel, ad viam ferream, Belem-Bragança, silva paludosa, Sept. 22, 1908, *Ducke 21624* (B); vicinity of Para, Dec. 28, 1907, *Baker 84* (D); AMAZONAS: in sylvis Japurensibus, Jan., year lacking, *Martius s.n.* (M, TYPE, MBG, photograph and analytical drawings); campo, Fortaleza, Oct., 1901, *Ule 5923* (B).

PERU: LORETO: Flutfreier Hochwald, Mündung de Santiago, alt. 160 m., Sept. 11, 1924, *Tessmann 4009* (B, D, S); same locality, Oct. 21, 1924, *Tessmann 4356* (B, D); lower Rio Huallaga, alt. 155–210 m., Oct.–Nov., 1929, *Williams 4024* (B, FM); forest, Mishuyacu, near Iquitos, alt. 100 m., Oct.–Nov., 1929, *Klug 422* (FM); same locality, Dec., 1929, *Klug 657* (FM, US).

The rather disintegrated geographical distribution of this species has not been clarified by the discovery of morphological characters which might be used for taxonomic subdivision. In the variability of leaf outline and dimensions of the corolla *O. cognata* vividly recalls *O. Hoffmannseggiana*, which has a very similar distribution.

2. Odontadenia funigera Woodson, spec. nov.

Suffruticosa volubilis altitudine ignota; ramulis teretibus crassiusculis cortice rubro-brunneis conspicue lenticellatis; foliis oppositis petiolatis late ovalibus apice abrupte acutis basi obtusis 6–25 cm. longis 4.5–12.0 cm. latis utrinque opacis; petiolis 1–2 cm. longis; stipulis ovatis acutis 0.2–0.4 cm. longis scariaceis caducis; inflorescentiis corymboso-thyrsiformibus terminalibus lateralibusque 6–20-floris pedunculo petiolos ca. bis terve superante; pedicellis 1.3–1.5 cm. longis post maturitatem paulo accrescentibus minute denseque papillatis; bracteis ovatis 0.2–0.3 cm. longis scariaceis caducis; calycis laciniis ovato-oblongis obtusis rotundatisve inaequalibus 0.6–0.8 cm. longis scariaceis extus minute papillatis intus cum sequentibus alternatis 2–4-glanduligeris; corollae infundibuliformis fulgide flavae extus omnino glabrae tubo proprio 1.5–1.7 cm. longo basi ca. 0.25 cm. diametro metiente faucibus anguste campanu-

latis vel late tubulosis abrupte dilatatis plus minusve ventricosis 2.7–3.0 cm. longis ostio ca. 1.5 cm. diametro metiente lobis oblique obovatis obtusis rotundatisve ca. 3 cm. longis patulis; staminibus sub dilatatione faucium insertis antheris linearibus anguste auriculatis 0.6 cm. longis dorso minute papillatis; ovario latissime ovoideo ca. 0.15 cm. alto minute puberulo-papillato; stigmate fusiformi ca. 0.3 cm. longo; nectariis concrescentibus subintegris ovario ca. bis brevioribus; folliculis ignotis.

Stems relatively stout, dull reddish-brown, glabrous, conspicuously lenticellate when fully mature; leaves opposite, petiolate, broadly oval, apex abruptly acute, base obtuse, 6–25 cm. long, 4.5–12.0 cm. broad, either surface opaque; petioles 1–2 cm. long; stipules 2, ovate, acute, 0.2–0.4 cm. long, scarious, caducous; inflorescence corymbose-thyrsiform, terminal and lateral, bearing 6–20 bright yellow flowers; peduncle about 2–3 times longer than the subtending petioles; pedicels 1.3–1.5 cm. long, slightly accrescent after maturity, minutely and densely papillate; bracts ovate, 0.2–0.3 cm. long, scarious, caducous; calyx-lobes ovate-oblong, obtuse or rounded, unequal, 0.6–0.8 cm. long, scarious, without minutely papillate, the internal squamellae in alternate groups of 2–4; corolla infundibuliform, glabrous without, the proper-tube 1.5–1.7 cm. long, about 0.25 cm. in diameter at the base, the throat narrowly campanulate or broadly tubular, abruptly dilated, more or less ventricose, 2.7–3.0 cm. long, about 1.5 cm. in diameter at the orifice, the lobes obliquely obovate, obtuse or rounded, about 3 cm. long, widely spreading; stamens inserted below the dilation of the corolla-throat, the anthers linear, narrowly auriculate, 0.6 cm. long, minutely papillate dorsally; ovary broadly ovoid, about 0.15 cm. long, minutely puberulent-papillate; stigma fusiform, about 0.3 cm. long; nectaries concrescent, subentire, about ½ as long as the ovary; follicles unknown.

BRAZIL: AMAZONAS: sandy woods, Manãos, alt. 25 m., Oct. 13, 1929, *Killip & Smith 30048* (MBG, TYPE, US).

The relationships of this species, previously confused with *O. cognata,* are set forth in the key to species.

3. Odontadenia surinamensis Woodson, spec. nov.

Suffruticosa volubilis omnino glabra altitudine ignota; ramulis teretibus gracilibus cortice rubro-brunneis conspicue lenticellatis; foliis oppositis breviter petiolatis ovalibus apice acutis vel brevissime acuminatis basi obtusis 12–15 cm. longis 5–7 cm. latis utrinque opacis; petiolis 1.0–1.5 cm. longis; stipulis haud visis; inflorescentiis corymboso-thyrsiformibus terminalibus ca. 20–40-floris pedunculo petiolos subaequante; pedicellis 0.8–1.0 cm. longis post maturitatem paulo accrescentibus; bracteis ovato-lanceolatis acuminatis 0.2–0.4 cm. longis scariaceis caducis; calycis laciniis oblongis obtusis rotundatisve inaequalibus 0.6–0.7 cm. longis extus minute papillatis intus cum sequentibus alternatis 2–4-glanduligeris; corollae infundibuliformis viridi- vel flavidulo-albidae extus glabrae vel indistincte papillatae tubo proprio 1.0–1.3 cm. longo basi ca. 0.1 cm. diametro metiente faucibus angustissime conicis 2.6–3.0 cm. longis ostio ca. 0.3–0.4 cm. diametro metiente lobis late dolabriformibus obtusis 0.7–0.9 cm. longis patulis; staminibus sub dilatatione faucium insertis antheris anguste elliptico-oblongis acuminatis anguste auriculatis 0.45 cm. longis dorso minute papillatis; ovario late ovoideo ca. 0.15 cm. longo glabro; stigmate fusiformi apice obtuse 2-lobato 0.2 cm. longo; nectariis concrescentibus subintegris ovario ca. bis brevioribus; folliculis ignotis.

Plants glabrous; stems relatively slender, dull reddish-brown, conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oval, apex acute to very shortly acuminate, base obtuse, 12–15 cm. long, 5–7 cm. broad, either surface opaque; petioles 1.0–1.5 cm. long; stipules caducous, not seen; inflorescence corymbose-thyrsiform, terminal, bearing about 20–40 greenish- or yellowish-white flowers; peduncle about as long as the subtending petioles; pedicels 0.8–1.0 cm. long, somewhat accrescent after maturity; bracts ovate-lanceolate, acuminate, 0.2–0.4 cm. long, scarious, caducous; calyx-lobes oblong, obtuse or rounded, unequal, 0.6–0.7 cm. long, minutely papillate without, the internal squamellae in alternate groups of 2–4; corolla infundibuliform, glabrous or indistinctly papillate without, the proper-tube 1.0–1.3 cm. long,

about 0.1 cm. in diameter at the base, the throat very narrowly conical, 2.6–3.0 cm. long, about 0.3–0.4 cm. in diameter at the orifice, the lobes broadly dolabriform, 0.7–0.9 cm. long, widely spreading; stamens inserted below the dilation of the corolla-throat, the anthers narrowly elliptic-oblong, acuminate, narrowly auriculate, 0.45 cm. long, minutely papillate dorsally; ovary broadly ovoid, about 0.15 cm. long, glabrous; stigma fusiform, bluntly 2-lobed, 0.2 cm. long; nectaries concrescent, nearly entire, about half as tall as the ovary; follicles unknown.

DUTCH GUIANA: fluv. Tapanahoni, July, 1904, *Versteeg 680* (U, TYPE, MBG, photograph and analytical drawings).

Differs from *O. cognata* chiefly in the much shorter inflorescence, narrower, glabrous corolla, and narrower calyx-lobes, as set forth in the key to species. This species has previously been confused with *O. puncticulosa.*

4. **Odontadenia neglecta** Woodson, spec. nov.

Suffruticosa volubilis; ramulis teretibus crassiusculis cortice rubro-brunneis conspicue lenticellatis glabris; foliis oppositis breviter petiolatis ovato-ellipticis apici acutis basi obtusis subrotundatisve 6–10 cm. longis 2.5–6.0 cm. latis firme membranaceis omnino glaberrimis opacis subtus nervo medio venisque conspicuis subverrucosis; petiolis 0.7–0.9 cm. longis; stipulis interpetiolaribus 2 late oblongo-lanceolatis scariaceis caducis; inflorescentiis thyrsiformibus plurifloris et terminalibus et lateralibus folia superantibus; pedicellis 0.5–0.7 cm. longis post maturitatem paulo accrescentibus glabris; bracteis oblongo-lanceolatis 0.1–0.3 cm. longis scariaceis caducis; calycis laciniis conspicue inaequalibus oblongo-ovatis rotundatis arcte imbricatis exterioribus 0.5–0.6 cm. longis interioribus 0.7–0.9 cm. longis scariaceis extus glabris vel marginibus minute ciliolatis intus basi in marginibus 2-glanduligeris; corollae infundibuliformis luteae extus omnino glabrae tubo proprio gracile cylindrico 1.0–1.2 cm. longo basi ca. 0.15 cm. diametro metiente faucibus gradatim dilatatis anguste cylindrico-conicis 1.9–2.1 cm. longis ostio ca. 0.7 cm. diametro metiente lobis oblique obovatis brevissime acuminatis 1.8–2.0 cm. longis patulis; staminibus sub dilatatione faucium insertis antheris oblongo-linearibus anguste 2-auriculatis acuminatis 0.5 cm. longis apice minutissime papillatis caeterum glabris; ovario late ovoideo minute papillato ca. 0.1 cm. longo; stigmate anguste fusiforme 0.2 cm. longo; nectario alte annulato subintegro ovarium subaequante; folliculis ignotis.

Stems relatively stout, glabrous, reddish-brown, conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, ovate-elliptic, apex acute, base obtuse to rounded, 6–10 cm. long, 2.5–6.0 cm. broad, firmly membranaceous, glabrous, opaque, the midrib and veins conspicuously subverrucose beneath; petioles 0.7–0.9 cm. long; stipules 2, interpetiolar, broadly oblong-lanceolate, scarious, caducous; inflorescence thyrsiform, several-flowered, both terminal and lateral, somewhat surpassing the subtending leaves; pedicels 0.5–0.7 cm. long, somewhat accrescent at maturity, glabrous; bracts oblong-lanceolate, 0.1–0.3 cm. long, scarious, caducous; calyx-lobes conspicuously unequal, oblong-ovate, rounded, closely imbricated, the outer 0.5–0.6 cm. long, the inner 0.7–0.9 cm. long, scarious, glabrous without, or the margins minutely ciliolate, the internal squamellae in alternate pairs; corolla infundibuliform, glabrous without, the proper-tube 1.0–1.2 cm. long, about 0.15 cm. in diameter at the base, the throat narrowly cylindrical-conical, 1.9–2.1 cm. long, about 0.7 cm. in diameter at the orifice, the lobes obliquely obovate, very shortly acuminate, 1.8–2.0 cm. long, spreading; stamens inserted somewhat below the dilation of the corolla-throat, the anthers oblong-linear, narrowly 2-auriculate, 0.5 cm. long, very minutely papillate toward the tips, otherwise glabrous; ovary broadly ovoid, minutely papillate, about 0.1 cm. long; stigma narrowly fusiform, 0.2 cm. long; nectary annular, subentire, about equalling the ovary; follicles unknown.

BRAZIL: AMAZONAS: prope Panure ad Rio Uaupes, Oct. 1852–Jan. 1853, *Spruce 2748* (K, TYPE, MBG, photograph and analytical drawings).

5. **Odontadenia verrucosa** (R. & S.) K. Sch. ex Mgf. in Pulle, Fl. Surinam **4**: 53. 1932.

Echites verrucosa R. & S. Syst. **4**: 795. 1819; A. DC. in DC. Prodr. **8**: 475. 1844.

Echites amazonica Stadelm. Flora **24**^{1}: Beibl. 50. 1841; A. DC. loc. cit. 464. 1844.

Anisolobus amazonicus (Stadelm.) Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 114. 1860.

Echites bicornis R. Spruce, ex Muell.-Arg. loc. cit. 1860, nom. nud. in synon.

Anisolobus amazonicus (Stadelm.) Muell.-Arg. β. *latifolius* Muell.-Arg. loc. cit. 1860.

Anisolobus Sprucei Muell.-Arg. loc. cit. 1860.

Angadenia Amazonica (Stadelm.) Miers, Apoc. So. Am. 175. 1878.

Angadenia latifolia (Muell.-Arg.) Miers, loc. cit. 176. 1878.

Angadenia Sprucei (Muell.-Arg.) Miers, loc. cit. 1878.

Odontadenia Sprucei (Muell.-Arg.) K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 169. 1895.

Odontadenia amazonica (Stadelm.) Malme, Arkiv f. Bot. **21A**^{6}: 17. 1927.

Stems relatively stout, minutely puberulent when very young, glabrate and conspicuously lenticellate when fully mature; leaves opposite, petiolate, rather narrowly obovate-elliptic, apex shortly and obtusely acuminate, base acute, somewhat cuneate, 9–16 cm. long, 3.5–6.5 cm. broad, subcoriaceous, either surface glabrous, opaque, the lower somewhat paler; petioles 0.7–1.0 cm. long; stipules 2, broadly dentiform, about 0.1 cm. long, scarious, caducous; inflorescence thyrsiform, terminal, densely canescent, somewhat shorter than the subtending leaves, bearing 12–30 greenish, cream-colored flowers; pedicels 1.0–1.7 cm. long, somewhat accrescent after maturity; bracts minutely ovate, 0.1–0.2 cm. long, scarious, caducous; calyx-lobes ovate to broadly ovate-oblong, obtuse or rounded, unequal, 0.3–0.5 cm. long, scarious, minutely and densely papillate without, the internal squamellae in alternate groups of 2–3; corolla infundibuliform, densely and minutely velutinous-papillate without, the proper-tube 0.8–1.0 cm. long, about 0.2 cm. in diameter at the base, the throat narrowly tubular-conical, 1.5–2.3 cm. long, about 0.5 cm. in diameter at the orifice, the lobes obliquely obovate-oblong, obscurely acuminate, 0.9–

1.5 cm. long, widely spreading; stamens inserted just below the dilation of the corolla-throat, the anthers elliptic-linear, narrowly auriculate, 0.4–0.6 cm. long, minutely hirtellous dorsally; ovary oblongoid, about 0.15 cm. long, densely puberulent-papillate; stigma fusiform-capitate, with 5 inconspicuous basal projections, 0.2 cm. long; nectaries concrescent, subentire or minutely crenulate, about as long as the ovary; follicles relatively stout, divaricate, 12–15 cm. long, densely canescent without; seeds about 1 cm. long, the pale tawny coma about 2 cm. long.

BRAZIL: PARA: insulae Brenes aestuarii amazonici, Sept. 6, 1901, *Guedes 21800* (B); in ripa Ygarape et Tagipuru, Aug., year lacking, *Martius 2663* (M, MBG, photograph and analytical drawings); AMAZONAS: prope Panure ad Rio Uaupes, Oct., 1852–Jan., 1853, *Spruce 2503* (B, Bx, Camb., D); ad flum. Guiania v. Rio Negro supra ostium fluminis Casiquiari, 1854, *Spruce 3550* (Bx, Camb., V, MBG, photograph and analytical drawings); Panure ad Rio Uaupes, Oct., 1852–Jan., 1853, *Spruce 2555* (C, Camb., G, MBG, photograph and analytical drawings).

Spruce 2555 and *Spruce 2503,* referred to *Anisolobus Sprucei* and *A. amazonicus* respectively by Mueller-Argoviensis, are virtually indistinguishable except for the very slightly more copious indument of the former. The collector's data do not contradict the assumption that both were from the same locality, if not from the same plant or colony.

6. **Odontadenia affinis** Woodson, Ann. Mo. Bot. Gard. **18:** 549. 1931.

Stems relatively slender, glabrous, reddish-brown, rather inconspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, oblong-ovate, apex shortly and obtusely subcuspidate-acuminate, base acutish, 6–8 cm. long, 3.5–4.0 cm. broad, subcoriaceous, glabrous, opaque; petioles 0.5–0.8 cm. long; inflorescence lateral, thyrsiform, relatively few-flowered, somewhat shorter than the subtending leaves; bracts very inconspicuous; pedicels about 0.5 cm. long, glabrous; calyx-lobes ovate, obtusish, more or less conspicuously unequal, 0.4–0.55 cm. long, glabrous, or the margins very minutely ciliolate, the squamellae in alternate groups of 3–4; corolla infundibuliform, glabrous without, the proper tube 1.5–1.7 cm. long, about

0.25 cm. in diameter at the base, the throat conical, 2.0–2.3 cm. long, about 0.55 cm. in diameter at the orifice, the lobes obliquely obovate, 1.5–2.0 cm. long, spreading; stamens inserted somewhat below the dilation of the corolla-throat, the anthers narrowly lanceolate-sagittate, 0.5 cm. long, very minutely papillate dorsally; ovary broadly ovoid, about 0.15 cm. long, glabrous; stigma fusiform, about 0.2 cm. long; nectary annular, crenulate, much shorter than the ovary; follicles unknown.

PERU: LORETO: dense forest, Balsapuerto, alt. 150–350 m., Aug. 28–30, 1929, *Killip & Smith 28609* (US, TYPE, MBG, photograph and analytical drawings).

7. **Odontadenia Killipii** Woodson, Ann. Mo. Bot. Gard. **18:** 546. 1931.

Stems relatively stout, glabrous, conspicuously lenticellate when fully mature; leaves opposite, petiolate, broadly elliptic-oblong, apex abruptly and obtusely acuminate, base obtuse to acutish, 6–8 cm. long, 3–5 cm. broad, subcoriaceous, glabrous; petioles 1.0–1.5 cm. long, glabrous; inflorescence terminal, thyrsiform, somewhat surpassing the subtending leaves, bearing 15–20 showy, yellowish flowers, glabrous throughout; pedicels 0.5–0.7 cm. long; bracts ovate, 0.2–0.3 cm. long, scarious; calyx-lobes conspicuously unequal, ovate to ovate-oblong, obtuse, 0.2–0.3 cm. long, glabrous or essentially so, the internal squamellae solitary or in alternate pairs; corolla infundibuliform, glabrous without, the proper tube 1.0–1.5 cm. long, about 0.2 cm. in diameter at the base, the throat conical, 2.0–2.5 cm. long, about 1 cm. in diameter at the orifice, the lobes obliquely obovate-dolabriform, 2.5–3.0 cm. long, spreading; stamens inserted somewhat below the dilation of the corolla-throat, the anthers linear-sagittate, 0.3–0.4 cm. long, minutely puberulent-papillate dorsally; ovary ovoid-oblongoid, about 0.15 cm. long, glabrous; stigma fusiform, 0.2 cm. long; nectary tubular, entire or minutely crenulate, somewhat surpassing the ovary; follicles unknown.

PERU: LORETO: woods, Iquitos, alt. about 100 m., Sept. 26, 1929, *Killip & Smith 29847* (MBG, TYPE, US); Flussfreier Urwald, Iquitos, alt. 100 m., May 9, 1925, *Tessmann 5100* (B).

8. **Odontadenia cordigera** Woodson, spec. nov.

Suffruticosa volubilis omnino glaberrima altitudine ignota; ramulis crassiusculis maturitate cortice rubro-brunneis dense lenticellatis; foliis oppositis breviter petiolatis obovatis apice rotundatis non rarius sensim emarginatis basi obscure cordatis 7–8 cm. longis 4–6 cm. latis utrinque opacis; petiolis 0.5–0.7 cm. longis; stipulis 2 late reniformibus 0.2–0.3 cm. longis scariaceis caducis; inflorescentiis corymboso-thyrsiformibus lateralibus ca. 15–30-floris folia subaequantibus; pedicellis 0.4–0.5 cm. longis, post maturitatem paulo accrescentibus; bracteis minute ovatis ca. 0.1 cm. longis scariaceis caducis; calycis laciniis ovatis vel late trigonalibus obtusis rotundatisve inaequalibus 0.3–0.4 cm. longis scariaceis extus glabris intus basi cum sequentibus alternatis 1–2-glanduligeris; corollae infundibuliformis fulgide flavae extus glabrae tubo proprio 0.9–1.1 cm. longo basi ca. 0.15 cm. diametro metiente faucibus anguste conicis 2.0–2.3 cm. longis ostio ca. 1.2 cm. diametro metiente lobis oblique obovatis ca. 1.7 cm. longis patulis; staminibus sub dilatatione faucium insertis antheris linearibus acuminatis anguste auriculatis ca. 0.4 cm. longis dorso indistincte papillatis; ovario oblongoideo ca. 0.1 cm. longo glabro; stigmate fusiformi ca. 0.2 cm. longo; nectariis imperfecte concrescentibus manifeste inaequalibus tenuibus ovario multo brevioribus; folliculis desiderantibus.

Plants completely glabrous; stems relatively stout, reddish-brown, densely lenticellate when fully mature; leaves opposite, shortly petiolate, obovate, apex rounded, not infrequently somewhat emarginate, base obscurely cordate, 7–8 cm. long, 4–6 cm. broad, either surface opaque; petioles 0.5–0.7 cm. long; stipules 2, broadly reniform, 0.2–0.3 cm. long, scarious, caducous; inflorescence corymbose-thyrsiform, lateral, about equalling the subtending leaves, bearing 15–30 bright yellow flowers; pedicels 0.4–0.5 cm. long, somewhat accrescent at maturity; bracts minutely ovate, about 0.1 cm. long, scarious, caducous; calyx-lobes ovate or broadly trigonal, obtuse or rounded, unequal, 0.3–0.4 cm. long, scarious, glabrous without, the internal alternate squamellae solitary or paired; corolla infundibuliform, glabrous without, the proper-tube 0.9–1.1 cm. long, about 0.15

cm. in diameter at the base, the throat narrowly conical, 2.0–2.3 cm. long, about 1.2 cm. in diameter at the orifice, the lobes broadly obovate, about 1.7 cm. long, widely spreading; stamens inserted somewhat below the dilation of the corolla-throat, the anthers linear, acuminate, narrowly auriculate, about 0.4 cm. long, indistinctly papillate dorsally; ovary oblongoid, about 0.1 cm. long, glabrous; stigma fusiform, about 0.2 cm. long; nectaries imperfectly concrescent, manifestly unequal, tenuous, much shorter than the ovary; follicles unknown.

PERU: LORETO: dense forest, Mishuyacu, near Iquitos, alt. about 100 m., Sept. 24–28, 1929, *Killip & Smith 29916* (MBG, TYPE, US).

9. **Odontadenia lutea** (Vell.) Mgf. in Fedde, Rep. Sp. Nov. **20**: 24. 1924.

Echites lutea Vell. Fl. Flum. 109. 1830; Icon. **3**: *pl. 25.* 1827; A. DC. in DC. Prodr. **8**: 467. 1844; Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 159. 1860; Miers, Apoc. So. Am. 194. 1878.

Echites Zuccariniana Stadelm. Flora **24**^{1}: Beibl. 76. 1841; A. DC. loc. cit. 471. 1844.

Anisolobus hebecarpus Muell.-Arg. loc. cit. 111. *pl. 33.* 1860; Miers, loc. cit. 170. 1878.

Anisolobus hebecarpus Muell.-Arg. α. *tomentosus* Muell.-Arg. loc. cit. 112. 1860.

Anisolobus hebecarpus Muell.-Arg. α. *tomentosus* Muell.-Arg. *a. erectus* Muell.-Arg. loc. cit. 1860.

Anisolobus hebecarpus Muell.-Arg. α. *tomentosus* Muell.-Arg. *b. scandens* Muell.-Arg. loc. cit. 1860.

Anisolobus hebecarpus Muell.-Arg. β. *glabratus* Muell.-Arg. loc. cit. 1860.

Echites pulcherrima Pohl, ex Muell.-Arg. loc. cit. 1860, nom. nud. in synon.

Echites hebecarpa Benth. ex Muell.-Arg. loc. cit. 1860, nom. nud. in synon.

Anisolobus Zuccarinianus (Stadelm.) Miers, loc. cit. 171. 1878.

Anisolobus pulcherrimus Miers, loc. cit. 1878.

Odontadenia Zuccariniana (Stadelm.) K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 169. 1895.

Odontadenia Zuccariniana (Stadelm.) K. Sch. f. *angustifolia* Malme, Bihang till K. Sv. Vet. Akad. Handl. Afd. III. **24**^{10}: 23. 1899.

Odontadenia Zuccariniana (Stadelm.) K. Sch. f. *ovalifolia* Malme, loc. cit. 1899.

Odontadenia Zuccariniana (Stadelm.) K. Sch. var. *tomentosa* Muell.-Arg. f. *scandens* Muell.-Arg. ex Mgf. Notizblatt **9**: 80. 1924, sphalm.

Plants densely and minutely hirtellous to glabrate or glabrous; stems relatively stout, becoming conspicuously lenticellate when fully mature; leaves opposite, the blade subcoriaceous, broadly oval to narrowly oblong-elliptic, apex obtuse or rounded to broadly acuminate, base narrowly and rather obscurely cordate, 7–15 cm. long, 3–6 cm. broad, drying dark brownish-green, either surface opaque, the lower somewhat paler, the petiole 0.5–0.75 cm. long; stipules 2, oblong, 0.5–0.75 cm. long, caducous; inflorescence lateral to subterminal, contracted-thyrsiform, many-flowered, usually somewhat surpassed by the subtending leaves, densely canescent to glabrate; pedicels 1.5–2.0 cm. long, somewhat accrescent at maturity, the subtending bracts ovate-lanceolate, 0.4–0.6 cm. long, caducous; calyx-lobes conspicuously unequal, ovate to broadly oblong, broadly obtuse or rounded, 0.75–1.25 cm. long, the squamellae solitary or rarely geminate, narrowly liguliform; corolla infundibuliform, whitish tinged with yellow, glabrous without, the proper-tube cylindrical, somewhat inflated at the base, contracting toward the insertion of the stamens, 1.75–2.0 cm. long, about 0.4 cm. in diameter at the base, the throat broadly conical-campanulate, 2.0–2.25 cm. long, about 1.25 cm. in diameter at the orifice, the lobes obliquely obovate, shortly acuminate, 2.25–3.0 cm. long, widely spreading; stamens inserted at the base of the corolla-throat, the anthers narrowly elliptic-sagittate, 0.8 cm. long, minutely hirtellous dorsally; carpels oblong-ovoid, 0.2 cm. long, minutely papillate; stigma fusiform-capitate, with 5 obscure basal lobes, 0.2 cm. long; nectary annular, deeply 5–lobed, about twice surpassing the ovary; follicles relatively stout, divaricate, 15–20 cm. long, glabrous to minutely velutinous (according to Muell.-Arg.); seeds unknown.

BRAZIL: PARA: in vicinibus Santarem, June, 1850, *Spruce s.n.* (C, Camb., V, MBG, photograph); RIO DE JANEIRO: environs de Rio de Janeiro, Febr., 1882, *Glaziou 12957* (C, K): MINAS GERAES: Trahiras, date lacking, *Pohl 1899* (V); Corallino, date lacking, *Pohl 1383* (V); SÃO PAULO: inter Canna Verde et S. João, Febr., 1849, *Regnell III 880* (S); Batataes, Febr., 1849, *Regnell III 850* (S); MATTO GROSSO: Serra do Itapirapuan, in campo dumetoso (''cerrado''), April 29, 1894, *Lindmann A3337* (S); Cuyaba, in ''cerrado,'' April 10, 1894, *Malme 1536* (S); Sta. Anna da Chapada, in ''cerrado,'' July 29, 1902, *Malme s.n.* (S).

Odontadenia lutea is extremely variable in leaf size and outline, and particularly so in indument. Mueller recognized several subspecific categories in dealing with this species, and justification may exist for such a treatment. Nevertheless, the numerous specimens examined during the course of this study have revealed such a complicated range of intergradations that it has been resolved to postpone subspecific division until the genus can be studied more intimately, preferably by a student resident in the South American tropics.

10. **Odontadenia puncticulosa** (A. Rich.) Pulle, Enum. Pl. Surinam 383. 1906.[1]

Echites puncticulosa A. Rich. Act. Soc. Hist. Nat. Paris **1:** 107. 1792; E. Mey. Nov. Act. Acad. Nat. Cur. **12:** 782. 1824.

Echites Cururu Mart. in Buchn. Rep. Pharm. 101. 1830; Stadelm. Flora **24**^{1}: Beibl. 78. 1841; A. DC. in DC. Prodr. **8:** 470. 1844.

Echites Cururu Mart. var. α. *angustifolia* Stadelm. loc. cit. 1841.

Echites Cururu Mart. var. β. *grandifolia* Stadelm. loc. cit. 79. 1841; A. DC. loc. cit. 1844.

Anisolobus Kappleri Miq. Linnaea **18:** 737. 1844.

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[1] Originally published by Pulle citing E. Mey. parenthetically. Meyer, however, in the work cited above, gives Richard as authority for *E. puncticulosa*, and his extended description should be construed, therefore, as supplementing the meagre diagnosis of the earlier author.

Anisolobus puncticulosus (A. Rich.) Miq. Stirp. Surinam. 158. 1851; Miers, Apoc. So. Am. 172. 1878.

Anisolobus Fockei Miq. loc. cit. 159. 1851; Miers, loc. cit. 1878.

Anisolobus Hostmanni Miq. loc. cit. 1851; Miers, loc. cit. 1878.

Anisolobus Cururu (Mart.) Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 112. *pl. 34.* 1860.

Anisolobus Cururu (Mart.) Muell.-Arg. β. *grandifolius* (Stadelm.) Muell.-Arg. loc. cit. 113. 1860.

Angadenia Cururu (Mart.) Miers, loc. cit. 175. 1878.

Angadenia grandifolia (Stadelm.) Miers, loc. cit. 1878.

Odontadenia Cururu (Mart.) K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 169. 1895.

Stems relatively stout, glabrous or minutely puberulent when young, conspicuously lenticellate when fully mature; leaves opposite, the blade subcoriaceous, ovate- to oblong-elliptic, apex shortly and obtusely acuminate, base obtuse to broadly acute, 8–20 cm. long, 3.5–10.0 cm. broad, either surface opaque, glabrous, drying dark brown, the lower somewhat paler, the petiole 0.5–1.0 cm. long; stipules 2, broadly ovate, 0.2–0.3 cm. long, caducous; inflorescence terminal, thyrsiform, many-flowered, somewhat surpassing the subtending leaves, minutely canescent; pedicels 0.75–1.0 cm. long, somewhat accrescent at maturity, the subtending bracts minutely ovate-reniform; calyx-lobes conspicuously unequal, ovate to broadly ovate-oblong, obtuse or rounded, 0.3–0.5 cm. long, the squamellae geminate; corolla infundibuliform, minutely papillate to glabrate without, the proper-tube cylindrical, slightly gibbous-inflated toward the base, sharply constricted toward the insertion of the stamens, 1.0–1.5 cm. long, about 0.3 cm. in diameter at the base, the throat narrowly tubular-conical, 2.0–2.75 cm. long, 0.6–0.75 cm. in diameter at the orifice, the lobes obliquely obovate-oblong, rather obscurely acuminate, 1.75–2.25 cm. long, widely spreading; stamens inserted at the base of the corolla-throat, the anthers narrowly oblong-elliptic, 0.5–0.6 cm. long, densely hirtellous dorsally; ovary oblongoid, 0.2 cm. long, glabrous; stigma obtusely fusiform with 5 inconspicuous, acute, basal projections, 0.2 cm. long; nectary tubular, completely concealing the ovary; follicles unknown.

DUTCH GUIANA: e regione Surinam. super., date lacking, *Wullschlägel 321* (V); in virgultis, date lacking, *Hostmann & Kappler 1203* (Camb., MBG, S); data incomplete, *Hostmann 629* (S).

BRAZIL: AMAZONAS: Vista Alegre, Rio Branco, Jan. 9, 1924, *Kuhlmann 21858* (S); Ega, date lacking, *Poeppig 2657* (V); PARA: Santa Izabel, ad viam ferream Belem-Bragança, Oct., 1906, *Goeldi 21777* (S).

11. Odontadenia spoliata Malme, Arkiv f. Bot. **21A**^{6}: 16. 1927.

Stems relatively stout, dull reddish-brown, minutely puberulent-papillate when very young, glabrate and conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, broadly ovate-elliptic, apex acute, base broadly obtuse or rounded, 11–14 cm. long, 6–9 cm. broad, firmly membranaceous to chartaceous, either surface opaque, the upper glabrous, the lower minutely tomentulose; petioles 1.0–1.5 cm. long; stipules 2, ovate-oblong, acute, 0.3–0.4 cm. long, scarious, caducous; inflorescence thyrsiform, terminal, somewhat shorter than the subtending leaves, bearing 6–12 cream-colored flowers; peduncle about twice as long as the petioles, densely canescent; pedicels 1.5–1.7 cm. long, somewhat accrescent after maturity, densely and minutely canescent; bracts ovate-lanceolate, 0.2–0.4 cm. long, scarious, caducous; calyx-lobes ovate, obtuse, unequal, 0.45–0.5 cm. long, scarious, papillate without, the internal squamellae in alternate groups of 3–6; corolla infundibuliform, minutely velutinous-papillate without, the proper-tube 1.3–1.6 cm. long, about 0.5 cm. in diameter at the base, the throat broadly tubular, 2.7–3.3 cm. long, about 1 cm. in diameter at the orifice, the lobes obliquely obovate, obtuse or rounded, 1.3–1.6 cm. long, widely spreading; stamens inserted at the base of the corolla-throat, the anthers narrowly oblong-elliptic, acuminate, narrowly auriculate, about 0.6 cm. long, minutely papillate dorsally; ovary ovoid, about 0.5 cm. long, glabrous or indistinctly puberulent-papillate; nectaries concrescent, irregularly erose, somewhat surpassing the ovary; follicles unknown.

BRAZIL: MATTO GROSSO: in silva ripa rivi, Sta. Anna da Chapada, July 20, 1902, *Malme 2036* (S, TYPE, MBG, photograph and analytical drawings).

The unusual foliar indument appears to be the chief mark of distinction between this species and *O. puncticulosa,* of which it might better be interpreted as a variety.

12. **Odontadenia Perrottetii** (A. DC.) Woodson, Ann. Mo. Bot. Gard. **18**: 546. 1931.

Anisolobus Perrottetii A. DC. in DC. Prodr. **8**: 395. 1844; Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 115. 1860; Miers, Apoc. So. Am. 169. 1878.

Anisolobus Perrottetii A. DC. β. *obtusus* Muell.-Arg. loc. cit. 1860.

Stems relatively stout, dull yellowish-brown, glabrous, conspicuously lenticellate when fully mature; leaves opposite, petiolate, broadly oval to oblong-elliptic, apex rather abruptly acuminate, base broadly obtuse or rounded, 7–13 cm. long, 2–6 cm. broad, subcoriaceous, either surface glabrous, opaque, or the upper somewhat nitidulous; petioles 0.8–1.5 cm. long; stipules ovate-trigonal, acute, 0.3–0.5 cm. long, scarious, caducous; inflorescence corymbose-thyrsiform, both terminal and lateral, bearing 2–10 pale yellowish flowers; peduncle glabrous, somewhat less than half as long as the subtending leaves; pedicels 1.0–1.5 cm. long, glabrous; bracts ovate, 0.2–0.3 cm. long, scarious, caducous; calyx-lobes ovate to ovate-oblong, broadly obtuse to rounded, 0.8–1.2 cm. long, scarious, glabrous without, the internal squamellae in alternate groups of 4–6; corolla infundibuliform, glabrous without, the proper-tube 0.9–1.5 cm. long, about 0.3 cm. in diameter at the base, the throat tubular-conical, 2.0–2.2 cm. long, about 0.6 cm. in diameter at the orifice, the lobes obliquely obovate, rounded, 1.2–1.5 cm. long, widely spreading; stamens inserted at the base of the corolla-throat, the anthers narrowly oblong, acuminate, narrowly and sharply auriculate, 0.6 cm. long, finely papillate dorsally; ovary ovoid, about 0.15 cm. long, glabrous; stigma fusiform, about 0.2 cm. long; nectaries concrescent, irregularly lacerate, concealing the ovary, about 0.2 cm. long; immature follicles relatively stout, divaricate, minutely puberulent-papillate.

FRENCH GUIANA: exact locality lacking, 1821, *Perrottet 270* (DC, TYPE).

BRAZIL: PARA: campos do Ariramba, regione fl. Trombetas, Oct. 9, 1913, *Ducke*

216647 (B); MARANHÃO: exact locality and date lacking, *Martius s.n.* (Bx); MATTO GROSSO: Chiquitos, 1842, *d'Orbigny 879* (Bx, D).

13. Odontadenia Sandwithiana Woodson, Ann. Mo. Bot. Gard. **18**: 547. 1931.

Plants completely glabrous; stems terete, relatively slender, dull yellowish-brown, conspicuously lenticellate when fully mature; leaves opposite, shortly petiolate, lanceolate- to oblong-elliptic, abruptly and obtusely subcaudate-acuminate, base acute, 6–15 cm. long, 2–6 cm. broad, subcoriaceous, olivaceous, the lower surface somewhat pallid; petioles 0.8–2.0 cm. long; stipules 2, broadly dentiform, 0.1–0.2 cm. long, scarious, caducous; inflorescence corymbose-thyrsiform, lateral (occasionally subterminal ?), bearing 6–18 yellowish flowers; peduncle 2–3 times longer than the subtending petioles; pedicels 1.8–3.0 cm. long, somewhat accrescent after maturity; calyx-lobes ovate to obovate-oblong, obtuse to rounded, unequal, 1.0–1.5 cm. long, scarious, glabrous, the internal squamellae in alternate groups of 2–4; corolla infundibuliform, the proper-tube 1.5–2.0 cm. long, about 0.2 cm. in diameter at the base, the throat tubular-conical, 1.4–1.6 cm. long, about 0.2–0.3 cm. in diameter at the orifice, the lobes obovate-dolabriform, obtuse or rounded, 0.7–1.0 cm. long, spreading; stamens inserted at the base of the corolla-throat, the anthers narrowly oblong, acuminate, narrowly auriculate, 0.5–0.6 cm. long, glabrous; ovary oblongoid, about 0.2 cm. long, glabrous; stigma fusiform, 0.2 cm. long; nectary tubular, subentire or minutely crenulate, somewhat surpassing the ovary; follicles unknown.

BRITISH GUIANA: Essequibo River, Moraballi Creek, near Bartica, alt. near sea-level, Nov. 2, 1929, *Sandwith 552* (K, TYPE, MBG, photograph and analytical drawings); Amakura River, Northwest District, Lat. 8° 10′ N., Long. 60° W., March 23–30, 1923, *Cruz 3542* (MBG, NY).

14. Odontadenia lauretiana Woodson & Steyermark, spec. nov.

Suffruticosa volubilis; ramulis teretibus crassiusculis cortice obscure flavo-brunneis juventate minute sparseque puberulis maturitate inconspicue lenticellatis; foliis oppositis petiolatis elliptico-lanceolatis apice acuminatis basi acutis 9–12 cm.

longis 3–4 cm. latis firme membranaceis omnino glabris opacis obscure olivaceis subtus pallidioribus; petiolis 1.2–1.7 cm. longis glabris; stipulis haud visis; inflorescentiis thyrsiformibus subcorymbosis terminalibus 30–50-floris; pedunculo glabro folia subaequante; pedicellis 1.5 cm. longis post maturitatem paulo accrescentibus glabris; bracteis ovato-lanceolatis 0.1–0.3 cm. longis scariaceis caducis; calycis laciniis ovato-oblongis rotundatis paulo inaequalibus 0.6–0.65 cm. longis minutissime papillatis margine ciliolatis intus basi cum sequentibus alternatis uniglanduligeris; corollae infundibuliformis pallide gilvae extus minute sparseque papillatae tubo proprio 1.2–1.4 cm. longo basi ca. 0.2 cm. diametro metiente prope apicem sensim angustato ibique staminigero faucibus tubulo-conicis 3.5 cm. longis ostio ca. 0.6 cm. diametro metiente lobis oblique obovatis ca. 1.5–1.8 cm. longis patulis; antheris anguste oblongo-ellipticis acuminatis anguste auriculatis ca. 0.5 cm. longis dorso glabris; ovario ovoideo minute papillato ca. 0.2 cm. longo; stigmate fusiformi ca. 0.2 cm. longo; nectariis concrescentibus margine minute crenulatis ovario ca. dimidio brevioribus; folliculis ignotis.

Stems terete, relatively stout, minutely and sparsely puberulent when young, glabrate, dull yellowish-brown, inconspicuously lenticellate when fully mature; leaves opposite, petiolate, elliptic-lanceolate, apex acuminate, base acute, 9–12 cm. long, 3–4 cm. broad, firmly membranaceous, glabrous, dull olive-green, opaque, the lower surface somewhat paler; petioles 1.2–1.7 cm. long, glabrous; stipules not seen; inflorescence thyrsiform, subcorymbose, terminal, bearing 30–50 cream-colored flowers; peduncle glabrous, about as long as the subtending leaves; pedicels about 1.5 cm. long, somewhat accrescent after maturity, glabrous; bracts ovate-lanceolate, 0.1–0.3 cm. long, scarious, caducous; calyx-lobes ovate-oblong, rounded, somewhat unequal, scarious, minutely papillate without, margin ciliolate, the internal squamellae alternate, solitary; corolla infundibuliform, minutely and sparsely papillate without, the proper-tube 1.2–1.4 cm. long, about 0.2 cm. in diameter at the base, markedly tapering toward the apex, the throat tubular-conical, about 3.5 cm. long, about 0.6 cm. in diameter at the ori-

fice, the lobes obliquely obovate, 1.5–1.8 cm. long, widely spreading; stamens inserted at the base of the corolla-throat, the anthers narrowly oblong-elliptic, acuminate, narrowly auriculate, about 0.5 cm. long, glabrous; ovary ovoid, about 0.2 cm. long, minutely papillate; stigma fusiform, about 0.2 cm. long; nectaries concrescent, minutely crenulate, about half equalling the ovary; follicles unknown.

PERU: LORETO: edge of forest, Fortaleza, Yurimaguas, alt. 155–210 m., Oct. 30, 1929, *Williams 4385* (B, FM, TYPE, MBG, photograph and analytical drawings).

In many respects *O. lauretiana* provides a connecting link between subgen. *Anisolobus* and *Euodontadenia.* The calyx-lobes are nearly equal, although closely imbricated as in other species of *Anisolobus.* The form of the corolla and the aspect of the foliage are likewise similar to those found in that subgenus. On the other hand, the inflorescence is thyrsiform, thus combining structural characters of the two subgenera. If stipules are proved to be absent, an additional link to *Euodontadenia* will be provided.

15. **Odontadenia Kochii** Pilger in Koch-Gruenberg, Zwei Jahre unter den Indianern **2**: 371. 1910; in Fedde, Rep. Sp. Nov. **8**: 151. 1910.

Stems relatively stout, glabrous, dark reddish-brown, conspicuously lenticellate when fully mature; leaves opposite, petiolate, oblong- to ovate-elliptic, apex abruptly and shortly acuminate, base obtuse to rounded, 6–10 cm. long, 3–6 cm. broad, firmly membranaceous to chartaceous, either surface glabrous, opaque, the lower somewhat paler; petioles 0.8–1.0 cm. long; stipules 2, broadly ovate, 0.1–0.2 cm. long, scarious, caducous; inflorescence corymbose, lateral, bearing 2–6 pale yellowish flowers; peduncle somewhat longer than the subtending petioles, glabrous; pedicels 1.3–1.5 cm. long, somewhat accrescent after maturity, glabrous; bracts ovate-lanceolate, 0.1–0.2 cm. long, scarious, caducous; calyx-lobes ovate to ovate-oblong, obtuse to rounded, 0.7–0.9 cm. long, scarious, minutely puberulent-papillate to glabrate without, the internal squamellae in alternate groups of 3–4; corolla infundibuliform, glabrous without, the proper-tube 1.4–2.0 cm. long, about

0.3 cm. in diameter at the base, the throat tubular-conical, 2.0–2.6 cm. long, about 0.7 cm. in diameter at the orifice, the lobes obliquely obovate, inconspicuously acuminate, 1.3–1.6 cm. long, widely spreading; stamens inserted at the base of the corolla-throat, the anthers oblong-elliptic, acuminate, narrowly auriculate, 0.5 cm. long, minutely papillate dorsally; ovary ovoid, about 0.15 cm. long, glabrous; stigma fusiform-capitate, about 0.15 cm. long; nectaries concrescent, irregularly 5-lobed, about as long as the ovary; follicles relatively stout, divaricate, 8–12 cm. long, densely and minutely velutinous to glabrate, seeds unknown.

BRAZIL: AMAZONAS: in Pflanzung neben Maloka, Dec., 1903, *Koch 70, 73* (B, TYPE, MBG, photograph and analytical drawings); Camanãos, Rio Negro, Dec. 22–23, 1930, *Holt & Blake 592* (MBG, US); same data, *Holt & Blake 594* (US).

16. **Odontadenia Schippii** Woodson, spec. nov.

Fruticosa volubilis alte scandens; ramulis crassiusculis juventate minutissime puberulis cortice flavo-brunneis conspicue lenticellatis; foliis oppositis petiolatis late ellipticis ovalibusve apice in acumen brevissimum obtusum abrupte productis basi obtusis 6.5–12.0 cm. longis 3.0–5.5 cm. latis firme membranaceis glabris supra subnitidulis subtus opacis pallidioribusque; petiolis 1.0–1.5 cm. longis glabris; inflorescentiis thyrsiformibus plurifloris et terminalibus et lateralibus folia aequantibus vel paulo superantibus; pedunculo brevissime puberulo-papillato; pedicellis 2.25–2.5 cm. longis minute denseque puberulo-papillatis; calycis laciniis manifeste inaequalibus exterioribus late ovatis obtusis rotundatisve 0.55–0.6 cm. longis coriaceis extus minute denseque puberulo-papillatis interioribus late oblongis late obtusis 0.9–1.0 cm. longis firme membranaceis extus minute sparseque puberulis; corollae speciosae gilvae extus omnino glabrae intus prope insertionem staminum puberulae caeterumque glabrae ut dicitur paululo suaveolentis tubo proprio 1.5–1.7 cm. longo basi ca. 0.35–0.4 cm. diametro metiente faucibus tubulo-conicis 2.5–2.7 cm. longis ostio ca. 0.5–0.6 cm. diametro metiente lobis oblique lateque dolabriformibus breviter acuminatis 1.3–1.5 cm. longis patulis; staminibus prope basem faucium insertis antheris oblongo-linearibus acuminatis 0.6 cm. longis dorso minute hirtellis; ovariis ovoideis ca. 0.1 cm. longis glabris; stigmate fusiformi ca. 0.225 cm. longo; nectariis concrescentibus carnosis obfuniformibus ca. 0.3 cm. longis; folliculis ignotis.

Stems relatively stout, minutely puberulent when young, deep brown, conspicuously lenticellate; leaves opposite, petiolate, broadly elliptic to oval, apex shortly and obtusely acuminate, base obtuse, 6.5–12.0 cm. long, 3.0–5.5 cm. broad, firmly membranaceous, glabrous, above somewhat subnitidulous, opaque and paler beneath; petioles 1.0–1.5 cm. long, glabrous; inflorescence thyrsiform, both terminal and lateral, equalling or somewhat surpassing the subtending leaves, bearing several handsome, creamy-white flowers said to be slightly fragrant; peduncle puberulent-papillate; pedicels 2.25–2.5 cm. long, puberulent-papillate; calyx-lobes manifestly unequal, the outer broadly ovate, obtuse or rounded, 0.55–0.6 cm. long, coriaceous, minutely and densely puberulent-papillate without, the inner broadly oblong, obtuse or rounded, 0.9–1.0 cm. long, firmly membranaceous, minutely and sparsely puberulent without; corolla infundibuliform, glabrous without, puberulent within at the insertion of the stamens, otherwise glabrous, the proper tube 1.5–1.7 cm. long, 0.35–0.4 cm. in diameter at the base, the throat tubular-conical, 2.5–2.7 cm. long, about 0.5–0.6 cm. in diameter at the orifice, the lobes obliquely and broadly dolabriform, shortly acuminate, 1.3–1.5 cm. long, spreading; stamens inserted at the base of the corolla-throat, the anthers oblong-linear, acuminate, 0.6 cm. long, minutely hirtellous dorsally; ovaries ovoid, about 0.1 cm. long, glabrous; stigma fusiform, about 0.225 cm. long; nectaries concrescent, fleshy, obfuniform, about 0.3 cm. long, deeply enclosing the ovary; follicles unknown.

BRITISH HONDURAS: Camp 36, Guatemala-B.H. survey, alt. 2800 ft., June 18, 1934, *Schipp S-709* (MBG, TYPE).

Mr. Schipp describes this species as follows: "Tall vine growing in mountain forest, fairly common, but difficult to collect as it grows on the largest of forest trees. Flowers creamy white with slight odor. 60 ft., stem 3 inches in diameter." *Odontadenia Schippii* is of great interest not only because it is by far the northernmost representative of its genus, but because of its close affinities with several South American species of rather limited distribution, as indicated in the key to species.

17. **Odontadenia gracilipes** (Stadelm.) Woodson, comb. nov.
Echites gracilipes Stadelm. Flora **24**[1]: Beibl. 22. 1841; A. DC. in DC. Prodr. **8**: 455. 1844.
Anisolobus ? gracilipes (Stadelm.) Muell.-Arg. in Mart. Fl. Bras. **6**[1]: 115. 1860.
Mitozus gracilipes (Stadelm.) Miers, Apoc. So. Am. 220. 1878.
Odontadenia goyazensis Glaziou, Bull. Soc. Bot. France **57**: Mem. 3e.: 455. 1910, nom. nud.

Stems terete, relatively slender, ferruginous-pilosulose when young, eventually glabrate and inconspicuously lenticellate when fully mature; leaves opposite, petiolate, oval, apex acuminate, base acute to obtuse, 7–12 cm. long, 2–5 cm. broad, subcoriaceous or firmly chartaceous, opaque, glabrous above, beneath rather irregularly and generally pilosulose; petioles 0.4–1.2 cm. long, pilosulose; stipules minute, flagelliform, numerous; inflorescence corymbose-thyrsiform, lateral, bearing 3–8 pale yellowish flowers; peduncle about 2 to 3 times longer than the subtending petioles, pilosulose; pedicels 1.3–1.4 cm. long, somewhat accrescent after maturity, minutely puberulent-papillate to minutely pilosulose; bracts minutely ovate-reniform, scarious, caducous; calyx-lobes ovate-oblong, unequal, rounded, 0.5–0.8 cm. long, scarious, glabrous or essentially so, the internal squamellae solitary, or in alternate pairs; corolla subsalverform, glabrous without, the tube 1.0–1.4 cm. long, about 0.2 cm. in diameter at the base, the lobes obovate-dolabriform, 0.7–0.8 cm. long, widely spreading; stamens inserted slightly below midway within the corolla-tube, the anthers narrowly oblong-elliptic, shortly acuminate, narrowly auriculate, about 0.4 cm. long, glabrous; ovary ovoid, about 0.15 cm. long, glabrous; nectaries concrescent, subentire, nearly equalling the ovary; follicles unknown.

BRAZIL: MINAS GERAES: in sylvis prope Rio Piranga, April, 1818, *Martius 1034* (M, TYPE, MBG, photograph and analytical drawings); DATA INCOMPLETE: *Sellow 692* (B); *Glaziou 20416* (B).

Sect. 2. ANOMALAE Woodson. Corolla salverform to subsalverform, the tube gradually dilating toward the orifice, but without a conspicuously expanded throat; inflorescence terminal, the subtending leaves indefinitely congested or subverticillate; stipules numerous, filiform, subfoliaceous. *Sp. 18.*

18. **Odontadenia anomala** (Heurck & Muell.-Arg.) Macbr. Field Mus. Publ. Bot. **11**: 35. 1931.

Anisolobus anomalus Heurck & Muell.-Arg. in Heurck, Obs. Bot. 160. 1870.

Perictenia stipellaris Miers, Apoc. So. Am. 183. *pl. 28.* 1878.

Echites stipellaris Spruce ex Miers, loc. cit. 1878, nom. nud. in synon.

Stems relatively stout, densely ferruginous-hirtellous to glabrate; leaves opposite or irregularly verticillate at the ends of branches, the blade firmly membranaceous, broadly obovate to obovate-oblong, apex rounded with an abrupt and short acumen, base broadly obtuse, 10–20 cm. long, 6.0–13 cm. broad, above drying dark brownish-green, minutely and rather sparsely hirtellous to glabrate, beneath much paler, densely and persistently tomentulose, the petiole 1.0–1.5 cm. long; stipules numerous, filiform, 0.75–1.0 cm. long, subfoliaceous; inflorescence terminal, densely fasciculate-thyrsiform, many-flowered, somewhat shorter than the subtending leaves, minutely and densely hirtellous; pedicels 0.75 cm. long, somewhat accrescent at maturity, the subtending bracts ovate to ovate-lanceolate, 0.5–0.75 cm. long, persistent; calyx-lobes conspicuously dissimilar, broadly ovate, obtuse or rounded, 0.3–0.4 cm. long, densely puberulent without, the squamellae solitary, deeply and irregularly cleft and divided; corolla deep yellow flushed with orange, salverform, glabrous, or minutely and sparsely pilosulose above, the tube narrowly cylindrical, somewhat dilated at the orifice, 2.5–3.0 cm. long, about 0.2 cm. in diameter at the base, the lobes obliquely obovate, acuminate, 3.25–4.0 cm. long, widely spreading; stamens inserted nearly at the base of the corolla-tube, the anthers narrowly oblong-linear, 0.9–1.0 cm. long, densely puberulent dorsally toward the tip; carpels ovoid, about 0.1 cm. long, densely lanulose; stigma fusiform, 0.15–0.2 cm. long; nectary tubular, irregularly erose, about twice as long as the ovary, sparsely and minutely pilosulose; follicles unknown.

PERU: LORETO: Tarapoto, 1855–56, *Spruce 4900* (B, C, Camb., K, V, MBG, photograph and analytical drawings); Stromgebiet des Maranon, Santiago-Mündung am Pongo de Manseriche, 1924, *Tessmann 4034* (S).

Subgen. II. EUODONTADENIA Woodson, subgen. nov.

Corolla-tube straight, never gibbous or arcuate; calyx-lobes equal or essentially so; inflorescence variously cymose, but not thyrsiform; stipules absent or extremely indefinite; stems not lenticellate, at least above, or very inconspicuously so. *Sects. 3–5.*

Sect. 3. HOFFMANNSEGGIANAE Woodson. Inflorescence both terminal and lateral, a variously compounded dichasium, frequently aggregate; corolla broadly infundibuliform, the proper tube conspicuously shorter than the throat; anthers densely hirsutulose dorsally; nectary deeply and indefinitely multifid. *Spp. 19–20.*

KEY TO THE SPECIES

a. Corolla 5–8 cm. long, the throat longer than broad.....*19. O. Hoffmannseggiana*
aa. Corolla 3–4 cm. long, the throat about as broad as long..............
....*20. O. stemmadeniaefolia*

19. Odontadenia Hoffmannseggiana (Steud.) Woodson, ex Gleason & A. C. Smith, Bull. Torrey Bot. Club **60**: 392. 1933.

Echites grandiflora G. F. W. Meyer, Fl. Esseq. 131. 1818, not Roxb., Roth, Stadelm., etc.

Echites macrantha R. & S. Syst. **4**: 795. 1819, not Spreng.

Echites Hoffmannseggiana Steud. Nomencl. ed. 2. **1**: 539. 1840.

Echites grandiflora Hoffmsg. ex Steud. loc. cit. 1840, nom. nud. in synon.

Odontadenia speciosa Benth. in Hook. Jour. Bot. **3**: 242. 1841; A. DC. in DC. Prodr. **8**: 360. 1844; Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 117. 1860; Miers, Apoc. So. Am. 126. *pl. 16.* 1878.

Haemadictyon ? grandiflorum (G. F. W. Meyer) A. DC. loc. cit. 426. 1844.

Echites Meyeriana R. & S. ex A. DC. loc. cit. 1844, nom. nud. in synon.

Echites sylvestris A. DC. loc. cit. 464. 1844.

Odontadenia grandiflora Miq. Stirp. Surinam. 166. 1851.

Dipladenia Harrisii Purdie in Hook. Bot. Mag. III. **11**: *pl. 4825*. 1855.

Cylicadenia Harrisii Lem. in Van Houtte, Illustr. Hort. **2**: Misc. 9. 1855.

Odontadenia sylvestris (A. DC.) Muell.-Arg. loc. cit. 1860.

Dipladenia Harrisonii Purdie ex Muell.-Arg. Linnaea **30**: 446. 1860, sphalm.

Odontadenia grandiflora (G. F. W. Meyer) Miers, loc. cit. 127. 1878.

Odontadenia formosa Miers, loc. cit. 1878.

Odontadenia Harrisii (Purdie) Miers, loc. cit. 128. 1878.

Cycladenia Harrisonii Lemaire, ex Miers, loc cit. 1878, sphalm in synon.

Angadenia sylvestris (A. DC.) Miers, loc. cit. 174. 1878.

Odontadenia grandiflora (G. F. W. Meyer) O. Ktze. Rev. Gen. 416. 1891, sphalm.

Odontadenia grandiflora (G. F. W. Meyer) K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 169. 1895, sphalm.

Plants completely glabrous; stems relatively stout; leaves opposite, the blade firmly membranaceous or chartaceous, broadly elliptic to obovate-lanceolate, apex rather abruptly and shortly subcaudate-acuminate, infrequently acute in older leaves, base acute to obtuse, 13–22 cm. long, 4–10 cm. broad, either surface opaque, or the upper somewhat glossy, the petiole 1.25–2.0 cm. long; stipules obsolete; inflorescence lateral, infrequently subterminal, dichasially cymose, frequently much reduced, about equalling the subtending leaves, not rarely much shorter, bearing few to many flowers; pedicels 2.0–2.5 cm. long, somewhat accrescent at maturity, the subtending bracts minutely ovate, persistent; calyx-lobes essentially equal, broadly ovate, obtuse, 0.4–0.6 cm. long, the squamellae solitary, or occasionally geminate; corolla infundibuliform, deep yellow tinged with red or orange, the proper-tube 0.5–1.0 cm. long, 0.3–0.5 cm. in diameter at the base, conspicuously constricted at the insertion of the stamens, the throat conical, 2.5–3.5 cm. long, 1.25–1.75 cm. in diameter at the orifice, the lobes obliquely obovate, broadly acuminate, 2.0–3.25 cm. long, widely spreading; stamens inserted at the base of the corolla-throat, the anthers elliptic-sagittate, 1.25–1.3 cm. long, densely hirtellous dorsally; ovary ovoid, about 0.2 cm. long, glabrous; stigma fusiform, 0.4 cm. long; nectary annular, deeply and indefinitely multifid, about half equalling the ovary; follicles relatively stout, more or less falcate, 15–30 cm. long, 1–2 cm. in diameter, glabrous; seeds 3–4 cm. long, the abundant, pale yellowish coma of about equal length.

COSTA RICA: forêts sur les bords du Rio Coto, March, 1896, *Pittier 9881* (Bx).

PANAMA: PANAMA: Trinidad River, alt. 40–80 m., 1911, *Pittier 3976* (G, US); in dense woods, Twin Hill, May, 1862, *Hayes 663* (BB, Bx, Camb., M, V); COLON: Perme, San Blas district, April 24, 1933, *Cooper 261* (MBG, NY).

BRITISH GUIANA: upper Rupununi River, near Dadanawa, May 30, 1922, *Cruz 1418* (MBG, NY); without data, *Schomburgk 309* (B, Camb., D, V).

DUTCH GUIANA: ad fl. Marowyne mediam, date lacking, *Kappler 1989* (B, S); e reg. Para, date lacking, *Wullschlägel 1971* (Bx, V).

FRENCH GUIANA: Acarouany, 1857, *Sagot 383* (D, S, V); Cayenne, date lacking, *Martin s.n.* (B).

BRAZIL: AMAZONAS: Ilha do Frio, Rio Branco, March, 1913, *Kuhlmann 3119* (B, S, U); PARA: Parana do Mirity-pucu (prope faucem fluvii Tocantins), ad ripas inundatis, May 1, 1924, *Kuhlmann 21856* (S); ad oram mer. fl. Amazonum ad ostium flum. Solimoes, June, 1851, *Spruce 1615* (Bx); MATTO GROSSO: on varzia land, river shore, near Tabajaza, upper Machado River region, Nov.–Dec., 1913, *Krukoff 1457* (MBG, NY).

PERU: LORETO: forest, Mishuyacu, near Iquitos, alt. 100 m., Febr.–March, 1930, *Klug 1026* (US).

In founding the genus *Odontadenia* upon *O. speciosa* (= *O. Hoffmannseggiana*), Bentham (loc. cit.) remarked that the immature seeds available for his study were without an apical coma. Sagot, however, noted upon the labels of his specimen cited above: "Flor. aureo lutei ampli, semina papposa!" In all other species of *Odontadenia* of which seed is known, furthermore, the usual apical coma has been observed. Nevertheless, Bentham's opinion concerning the lack of a coma in *O. speciosa* has been maintained, even by recent authors (cf. Markgraf, in Pulle, Fl. Surinam **4**: 48. 1932). Several fruiting specimens have been examined during the course of this study, and it may be stated unequivocably that the seeds of all were found surmounted by an abundant coma. A particularly handsome specimen upon which the seminal coma may be observed is *Kuhlmann 3119* (in Herb. Berol.).

20. **Odontadenia stemmadeniaefolia** Woodson, Ann. Mo. Bot. Gard. **18**: 548. 1931.

Plants completely glabrous; stems relatively stout; leaves opposite, shortly petiolate, obovate-oblong, apex shortly and obtusely acuminate, base more or less conspicuously cuneate, 15–20 cm. long, 8–10 cm. broad, firmly membranaceous, opaque; petioles 1.0–1.5 cm. long; inflorescence rather irregularly dichasial or aggregate, lateral, somewhat shorter than the subtending leaves, bearing 3–5 showy, reddish-yellow flowers; pedicels 1.0–1.3 cm. long; calyx-lobes equal or subequal, ovate-reniform, about 0.2 cm. long, the squamellae in alternate groups of 2–3; corolla infundibuliform, the proper-tube 0.8–1.0 cm. long, about 0.3 cm. in diameter at the base, the throat broadly conical, 0.7–1.0 cm. long, about 1 cm. in diameter at the orifice, the lobes obliquely obovate-dolabriform, 1.5–2.0 cm. long, widely spreading; anthers narrowly oblanceolate-sagittate, 0.8 cm. long, densely hirtellous dorsally; ovary ovoid, about 0.15 cm. long, glabrous; nectary annular, deeply and indefinitely multifid, somewhat surpassed by the ovary; follicles unknown.

PERU: LORETO: forest, Mishuyacu, near Iquitos, alt. 100 m., Jan., 1930, *Klug 782* (US, TYPE, MBG, photograph and analytical drawings).

Sect. 4. NITIDAE Woodson. Inflorescence lateral, scorpioid, usually simple; corolla salverform or narrowly infundibuliform, the proper tube scarcely narrower than the throat; anthers glabrous to puberulent-papillate dorsally; nectary 5-lobed, the divisions entire to crenulate. *Spp. 21–25.*

KEY TO THE SPECIES

a. Stamens inserted well above the base of the corolla-tube; species of South America (including Trinidad).
  b. Leaves obscurely cordate.
    c. Corolla narrowly infundibuliform; leaves glabrous throughout..*21. O. nitida*

cc. Corolla salverform; leaves densely puberulent-papillate beneath..*22. O. hypoglauca*

bb. Leaves not cordate.

c. Corolla salverform, 5–6 cm. long; calyx-lobes 0.4–0.5 cm. long..*23. O. geminata*

cc. Corolla narrowly infundibuliform, 2.5–3.5 cm. long; calyx-lobes 0.1 cm. long..*24. O. glauca*

aa. Stamens inserted nearly at the base of the corolla-tube; plants of Hispaniola..*25. O. polyneura*

21. **Odontadenia nitida** (Vahl) Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 118. 1860; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 169. 1895.

Echites nitida Vahl, Eclog. **2**: 19. *t. 13.* 1798; A. DC. in DC. Prodr. **8**: 453. 1844.

Echites lucida R. & S. Syst. **4**: 795. 1819; A. DC. loc. cit. 475. 1844, not Wall.

Odontadenia cordata A. DC. loc. cit. 360. 1844.

Odontadenia angustifolia A. DC. loc. cit. 1844.

Odontadenia nitida (Vahl) Muell.-Arg. α. *oblongifolia* Muell.-Arg. loc. cit. 119. 1860.

Odontadenia nitida (Vahl) Muell.-Arg. β. *acuminata* Muell.-Arg. loc. cit. 1860.

Odontadenia nitida (Vahl) Muell.-Arg. γ. *angustifolia* (A. DC.) Muell.-Arg. loc. cit. 1860.

Odontadenia lucida (R. & S.) Muell.-Arg. loc. cit. 120. 1860.

Angadenia nitida (Vahl) Miers, Apoc. So. Am. 177. 1878.

Rhabdadenia ? lucida (R. & S.) Miers, Apoc. So. Am. 123. 1878.

Mitozus tenellus Miers, loc. cit. 220. 1878.

Odontadenia Dusendschoenii K. Sch. ex Ule, in Engler's Jahrb. **40**: 403. 1908, nom. nud.

Plants completely glabrous; stems relatively slender; leaves opposite, the blade subcoriaceous, broadly oval to narrowly oblong-elliptic, obtuse to abruptly and shortly acuminate, base broadly and rather obscurely cordate, 7–18 cm. long, 2.5–9.0 cm. broad, drying dark olive-green to brownish, shining above, paler and glaucous beneath, the petiole 1.0–1.25 cm. long; stipules obsolete or essentially so; inflorescence lateral, scorpioid, simple, few- to many-flowered, somewhat surpassing the subtending leaves; pedicels 0.75–1.0 cm. long, somewhat accrescent at maturity, the subtending bracts minutely ovate-lanceolate, persistent; calyx-lobes essentially equal, ovate to ovate-lanceolate, acuminate, 0.4–0.5 cm. long, the squamellae geminate; corolla infundibuliform, glabrous without, white or pale cream, the proper tube 0.7–1.0 cm. long, about 0.15 cm. in diameter at the base, the throat tubular-conical, 1.7–2.3 cm. long, about 0.6 cm. in diameter at the orifice, the lobes obliquely obovate-dolabriform, obscurely acuminate, 1.5–1.8 cm. long, widely spreading; stamens inserted somewhat below midway within the proper tube of the corolla, the anthers narrowly elliptic-sagittate, 0.7 cm. long, minutely hirtellous dorsally; ovary ovoid, about 0.15 cm. long, glabrous; stigma fusiform, 0.3 cm. long; nectary annular, deeply 5- to many-lobed, about half equalling the ovary; follicles relatively short and stout, parallel to slighty falcate, 8–12 cm. long; seeds about 0.8 cm. long, the pale tawny coma about 2 cm. long.

TRINIDAD: Chancellor's Road, St. Ann's, March 24, 1924, *Broadway 5243* (D, MBG); Pitch Lake, 1891–92, *Warming 239* (C); Piarco Savanna, south of Dabadie, March 18, 1920, *Britton & Hazen 717* (G).

VENEZUELA: Caura-La Botellas, 1902, *Passarge & Selwyn 287* (B).

BRITISH GUIANA: locality lacking, 1858, *Schomburgk 200* (B).

DUTCH GUIANA: in campis (savannis), distr. Para, Febr.–Apr., 1844, *Kappler 1449* (BB, MBG, S); Paramaribo, date lacking, *Wullschlägel 322* (Bx, V); Republiek, Oct. 13, 1911, *Kuiper 40* (B, U).

FRENCH GUIANA: Cayenne, date lacking, *Jelski s.n.* (B).

BRAZIL: PARA: Alemquer, prope flumen, July 28, 1903, *Ducke 21644* (B); MATTO GROSSO: Cuyaba, in silvula ripa rivulis, July 17, 1902, *Malme 1766* (S); Cuyaba, in dumetis ruderalibus ("charravasco") alte volubilis, July 13, 1894, *Lindmann A3563* (S, MBG, photograph)

PERU: LORETO: Yurimaguas, Aug., 1902, *Ule 6272* (B, D); Tarapoto, Sept., 1902, *Ule 6390* (B, D).

22. **Odontadenia hypoglauca** (Stadelm.) Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 118. *pl. 35, fig. 1.* 1860; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 169. 1895.

Echites hypoglauca Stadelm. Flora **24**^{1}: Beibl. 23. 1841; A. DC. in DC. Prodr. **8**: 448. 1844.

Angadenia hypoglauca (Stadelm.) Miers, Apoc. So. Am. 173. 1878.

Angadenia majuscula Miers, loc. cit. 174. 1878.

Stems relatively stout, glabrous; leaves opposite, the blade coriaceous, broadly oval to oblong-elliptic, apex obtuse to rounded, base broadly and obscurely cordate, 7–15 cm. long, 3–8 cm. broad, upper surface glabrous, shining, lower surface glaucous, minutely and densely puberulent-papillate, the petiole 0.75–1.0 cm. long; stipules obsolete; inflorescence lateral, simply scorpioid, glabrous, about equalling or somewhat surpassing the subtending leaves, many-flowered; pedicels 1.0–1.25 cm. long, somewhat accrescent in fruit, the subtending bracts minutely ovate-reniform, caducous; calyx-lobes essentially equal, ovate-oblong, acute to obtuse, 0.4–0.6 cm. long, the squamellae geminate; corolla white or pale cream, salverform, glabrous without, the tube narrowly cylindrical, slightly dilating toward the orifice, 2.5–3.0 cm. long, about 0.3 cm. in diameter at the base, the lobes obliquely obovate, shortly acuminate, 2.0–2.5 cm. long, widely spreading; stamens inserted slightly below midway within the corolla-tube, the anthers narrowly elliptic-sagittate, about 1 cm. long, minutely papillate dorsally; carpels ovoid, 0.2 cm. long, glabrous; stigma fusiform, 2-lobed, 0.3–0.4 cm. long; nectary crown-shaped, deeply 5-lobed, about half as long as the ovary; follicles relatively stout, parallel or slightly falcate, 12–15 cm. long, glabrous; seeds unknown.

BRAZIL: PARA: in vicinibus Santarem, Apr., 1850, *Spruce 680* (Camb., M, V); campo non inundabili, Prainha, May 11, 1903, *Ducke 21645* (B); BAHIA: Maracas, date lacking, *Martius s.n.* (M); in sepibus ad Caiete, date lacking, *Martius s.n.* (M); GOYAZ: data incomplete, *Pohl 1898* (M); MATTO GROSSO: Sta. Anna da Chapada, in ora silva, Jan. 12, 1903, *Malme 3305* (S, MBG, photograph and analytical drawings); Cuyaba, in "cerrado," May 25, 1894, *Malme 1642* (S).

Also reported from Pernambuco by Mueller.

23. **Odontadenia geminata** (R. & S.) Muell.-Arg. in Mart. Fl. Bras. **6**^{1}: 118. 1860; K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 169. 1895.

Echites geminata R. & S. Syst. **4**: 796. 1819; A. DC. in DC. Prodr. **8**: 475, 1844.

Echites elegans Benth. in Hook. Jour. Bot. **3**: 249. 1841; A. DC. loc. cit. 1844.

Echites coriacea Benth. loc. cit. 1841; A. DC. loc. cit. 467. 1844, not Blume.

Odontadenia Poeppigii Muell.-Arg. loc. cit. 119. 1860.
Odontadenia coriacea (Benth.) Muell.-Arg. Linnaea **30**: 450. 1860.
Angadenia coriacea (Benth.) Miers, Apoc. So. Am. 177. 1878.
Angadenia elegans (Benth.) Miers, loc. cit. 178. 1878.
Angadenia geminata (R. & S.) Miers, loc. cit. 1878.

Plants completely glabrous; stems relatively slender; leaves opposite, the blade coriaceous or subcoriaceous, broadly oval to narrowly oblong-elliptic, apex obtuse to subacuminate, base obtuse to rounded, 6–12 cm. long, 2.5–7.0 cm. broad, above shining, beneath paler, glaucescent; petiole 0.75–1.0 cm. long; stipules obsolete; inflorescence lateral, simply scorpioid, about equalling or somewhat shorter than the subtending leaves, 2–7-flowered; pedicels 1.5–1.75 cm. long, somewhat accrescent in fruit, the subtending bracts minutely ovate-lanceolate, persistent; calyx-lobes essentially equal, broadly ovate, obtuse or broadly acute, 0.4–0.5 cm. long, the squamellae solitary or occasionally geminate; corolla white or pale cream tinged with yellow, salverform, glabrous without, the tube narrowly cylindrical, slightly dilated toward the orifice, 2.5–3.0 cm. long, about 0.3 cm. in diameter at the base, the lobes obliquely obovate, shortly acuminate, 2.5–3.0 cm. long, widely spreading; stamens inserted about midway within the corolla-tube, the anthers narrowly elliptic-sagittate, 0.9–1.0 cm. long, minutely papillate dorsally; ovary ovoid, about 0.15 cm. long, glabrous; stigma fusiform, 0.3 cm. long; nectary annular, deeply 5-lobed, somewhat shorter than the ovary; follicles relatively short and stout, parallel to slightly falcate, 8–10 cm. long, glabrous; seeds unknown.

BRITISH GUIANA: Kamakusa, upper Mazaruni River, July 11–22, 1923, *Cruz 4211* (MBG, NY); Kakburi, Pomeroon District, Febr. 10–15, 1923, *Cruz 3251* (US); Waini River, Northwest District, April 3–18, 1923, *Cruz 3703* (US).

DUTCH GUIANA: Wonotobo, Oct., 1916, *Stahel & Gonggrijp 2862* (B, U).

COLOMBIA: CAQUETA: Rio Caqueta ad cataractas Cupati, in ripis, Dec. 1, 1912, *Ducke 21821* (B).

BRAZIL: AMAZONAS: Vista Alegre, Rio Branco, in campis, March, 1913, *Kuhlmann 2917* (B, S, MBG, photograph and analytical drawings); prope San Gabriel da Cachoeira, ad Rio Negro, Jan.–Aug., 1852, *Spruce 2083* (Camb., V, MBG, photograph); prope San Carlos, ad Rio Negro, 1853–54, *Spruce 3152* (M, V); PARA: Bôa Vista on the Tapajos River, May–June, 1929, *Dahlgren & Sella 74* (B, FM, MBG, S); Faro, campina arenosa, Sept. 24, 1907, *Ducke 21650* (B); on varzia land, near Cassipa, Tapajos River region, Sept., 1931, *Krukoff 1247* (MBG, NY).

24. **Odontadenia glauca** Woodson, Ann. Mo. Bot. Gard. **18:** 550. 1931.

Plants glabrous throughout; stems relatively slender; leaves opposite, shortly petiolate, obovate-oblong, apex shortly and acutely acuminate, base obtuse or rounded, 6–8 cm. long, 3.5–4.5 cm. broad, coriaceous, lustrous above, glaucous beneath; petioles 0.3–0.5 cm. long; inflorescence lateral, scorpioid, somewhat shorter than the subtending leaves, bearing 3–5 white or cream-colored flowers; pedicels 1 cm. long; calyx-lobes subequal, ovate-trigonal, acutish, about 1 cm. long, scarcely imbricated, the alternate squamellae solitary; corolla infundibuliform, glabrous without, the proper tube 0.8–1.0 cm. long, about 0.1 cm. in diameter at the base, the throat tubular-conical, 0.7–1.0 cm. long, the lobes obliquely dolabriform, 1.0–1.5 cm. long, spreading; stamens inserted about midway within the corolla-tube, the anthers narrowly oblong-sagittate, 0.6 cm. long, glabrous; ovary ovoid, about 0.1 cm. long, glabrous; stigma 0.15 cm. long; nectary deeply 5-lobed, somewhat surpassing the ovary; follicles unknown.

VENEZUELA: AMAZONAS: Cerro Yapacana, upper Rio Orinoco, alt. about 100 m., April, 1931, *Holt & Blake 750* (US, TYPE, MBG, photograph and analytical drawings).

25. **Odontadenia polyneura** (Urb.) Woodson, Ann. Mo. Bot. Gard. **18:** 546. 1931.

Rhabdadenia polyneura Urb. Symb. Ant. **7:** 337. 1912.

Plants completely glabrous; stems relatively slender, reddish-brown, not lenticellate or very inconspicuously so; leaves opposite, petiolate, oblong- to obovate-elliptic, apex acute to acuminate, base obtuse to rounded, 3.5–8.0 cm. long, 1–4 cm. broad, firmly membranaceous, above olivaceous, slightly nitidulous, beneath paler and more or less glaucous, the midrib and veins somewhat verrucose; petioles 0.5–1.0 cm. long; stipules obsolete; inflorescence scorpioid, simple, lateral, opposite, somewhat surpassing the leaves, bearing 6–10 white or cream-colored, showy flowers; pedicels 0.9–1.0 cm. long, somewhat accrescent after maturity; bracts ovate-lanceolate, 0.1–0.3 cm. long, scarious, caducous; calyx-lobes ovate, broadly acute, essentially equal, 0.3–0.4 cm. long, glabrous without, the squamellae in alternate groups of 3–6; corolla infundibuliform, glabrous without, the proper-tube 0.4–0.5 cm. long, about 0.3 cm. in diameter at the base, the throat narrowly campanulate, 1.3–1.5 cm. long, about 0.7–0.8 cm. in diameter at the orifice, the lobes obliquely obovate, shortly acuminate, 1.5–1.7 cm. long, widely spreading; stamens inserted nearly at the base of the corolla-tube, the anthers narrowly elliptic-lanceolate, narrowly auriculate, 0.8 cm. long, glabrous; ovary broadly ovoid, about 0.15 cm. long, glabrous; stigma fusiform, 0.2 cm. long; nectaries 5, concrescent at the base, truncate or somewhat emarginate, about half as long as the ovary; follicles unknown.

SANTO DOMINGO: inter Constanza et Rio Jimenoa in Loma del Hato quemado, alt. 1400 m., in sylvis, June, 1910, *Tuerckheim 3341* (B, TYPE, MBG, S).

Also reported from Haiti by Urban (loc. cit.).

Sect. 5. LAXIFLORAE Woodson. Inflorescence both terminal and lateral, laxly and irregularly compound, dichasial to scorpioid or helicoid; corolla infundibuliform, relatively small; anthers glabrous; nectary annular, essentially concrescent. *Sp. 26.*

26. Odontadenia laxiflora (Rusby) Woodson, Ann. Mo. Bot. Gard. **19**: 386. 1932.

Laubertia (?) laxiflora Rusby, Bull. N. Y. Bot. Gard. **4**: 408. 1907.

Codonechites paniculata Mgf. Notizblatt **9**: 80. *fig. 2 A–E.* 1924.

Plants completely glabrous; stems relatively slender, light greenish- to reddish-brown, not lenticellate above or very inconspicuously so; leaves opposite, shortly petiolate, oblong-elliptic, apex shortly subcaudate-acuminate, base acute to obtuse, 8–13 cm. long, 2.5–4.0 cm. broad, membranaceous to subchartaceous, above pale olivaceous, nitidulous, beneath somewhat paler, opaque; petioles 0.4–0.6 cm. long; stipules obsolete; inflorescence laxly and irregularly compound, dichasial to scorpioid or helicoid, both terminal and alternate-lateral, about twice surpassing the leaves, bearing 20–30 white or cream-colored flowers; pedicels 1.0–1.2 cm. long, somewhat accrescent in fruit; bracts minutely ovate-trigonal, scarious; calyx-lobes ovate, broadly acute, 0.2–0.25 cm. long, glabrous without, the squamellae in alternate groups of 2–4; corolla infundibuliform, glabrous without, the proper-tube 0.6–0.7 cm. long, about 0.15 cm. in diameter at the base, the throat rather narrowly campanulate, 0.7–0.8 cm. long, about 0.5 cm. in diameter at the orifice, the lobes obliquely obovate, shortly acuminate, 0.5–0.6 cm. long, widely spreading; stamens inserted at the base of the corolla throat, the anthers elliptic-lanceolate, acuminate, narrowly auriculate, 0.35 cm. long, glabrous; ovary broadly ovoid, about 0.1 cm. long, glabrous; stigma fusiform-subcapitate, obscurely digitate below, 0.15 cm. long; nectaries essentially concrescent, truncate, fleshy, about half as long as the ovary; follicles unknown.

BOLIVIA: data incomplete, *Bang 2056* (NY, TYPE, MBG, photograph and analytical drawings).

BRAZIL: Rio Acre, Seringal bei S. Francisco, March, 1911, *Ule 9698* (B, MBG, photograph).

It does not appear possible to recognize *O. laxiflora* as constituting a distinct genus without raising to generic rank also other entities of the inclusive genus *Odontadenia* interpreted as sections in this revision.

EXCLUDED OR UNCERTAIN SPECIES

Odontadenia cuspidata Rusby, Descr. So. Am. Pl. 89. 1920 = **Mandevilla cuspidata** (Rusby) Woodson, Ann. Mo. Bot. Gard. **20**: 730. 1933.

Odontadenia glandulosa (R. & P.) K. Sch. in Engl. & Prantl, Nat. Pflanzenfam. **4**^{2}: 169. 1895 = **Mandevilla glandulosa** (R. & P.) Woodson, Ann. Mo. Bot. Gard. **19**: 66. 1932.

Odontadenia gracilis K. Sch. in Glaziou, Bull. Soc. Bot. France **57**, Mem. 3e.: 455. 1910, nom. nud.

Anisolobus lancifolius K. Sch. in Glaziou, loc. cit. 1910, nom. nud.

(To be continued)